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Our Australian Colleagues

ON another page we publish an account of the Annual Conference of the Australian Veterinary Association; and the intrinsic interest of the proceedings makes clear, yet again, the value and importance of the work done, often under very arduous conditions, by our Australian colleagues.

The profession, throughout the world, has a unity of purpose in the control and eradication of animal disease, and ideally these objectives should be carried forward on an international basis. However, until this is achieved, we do well to note with interest and cordial appreciation the activities of veterinary surgeons within the Commonwealth. In this respect the Australian veterinary profession, numbering about 600, is particularly noteworthy.

Australia depends on her primary industries, and rural products contribute over 80 per cent. of her export income; of this percentage three-quarters is of animal origin. Her population is increasing rapidly and is already 30 per cent. higher than in 1939. This has necessitated a rapid expansion in production for home and export markets, and the veterinary services have played a vital part in meeting these requirements. The Australian Federal Government has appreciated the work of the profession, and the Minister in charge of the Commonwealth Scientific and Industrial Research Organisation has stated that the annual increased return to the country as the result of the activity of that organisation equalled the total cost of the organisation since its inception in 1926. The C.S.I.R.O. has esablished its major centres of veterinary research in Sydney, Melbourne and Brisbane, and the Division of Animal Health and Production is fortunate in having a veterinary surgeon, Sir Ian Clunies-Ross as Chairman. There is a gradual transition from the more basic research of the C.S.I.R.O. institutes, through the State veterinary laboratories, with their more applied interests, to an efficient field veterinary service.

Those veterinary surgeons who are responsible for disease control demand our admiration. Over 50 per cent. of the cattle population of 15½ million—some 4½ million more than in the United Kingdom—are reared in the vast lands of northern Australia. Northern Territory alone comprises about 335 million acres. Complete musters of animals are impossible where individual cattle stations may cover more than 10,000 square miles. The cattle are handled only once or twice yearly, and under these conditions of animal management, the control of such endemic diseases as contagious bovine pleuropneumonia, and the tick fevers, presents a major problem. The difficulties are greatly increased at the end of the rainy season, when thousands of cattle leave the stations and move slowly, on foot, along hundreds of miles of stock routes to rail-heads and slaughterhouses. Animals may leave properties on which particular diseases are endemic, and carry these into other areas where the population is fully susceptible, so that serious epidemics can occur. Constant veterinary supervision along the stock routes is maintained by personnel equipped with trucks fitted with two-way radio, and the veterinarians may be away from base for a month or more at a time. In view of the difficulties, the success of the veterinary services in controlling disease and preventing the introduction of exotic epizootic diseases, is remarkable.

The sheep population numbers approximately 117½ million, compared with 23 million in this country, and it is not surprising that considerable attention has been given to the control of their major diseases.

The results of pasture improvement and irrigation over recent years have been so dramatic that it is impossible to assess Australia's potential productive capacity. Problems of animal management are becoming increasingly important, and the Australian veterinary profession are making certain that the graduates from their two veterinary schools in Sydney and Brisbane are adequately equipped to advise in this field. Veterinary surgeons occupy key teaching positions in Animal Husbandry.

Before 1939, private practitioners in country areas were a rarity, but now their numbers are increasing, and many have retainers from stud or sheep stations.

This brief note gives an all too inadequate idea of the immense tasks of our Australian colleagues, further complicated as these tasks are by vast distances, vast numbers, extremes of climate, and a rapidly expanding economy. Work is being done that reflects credit upon the profession everywhere, and in taking cognisance of it we extend a very cordial greeting to the members of the Australian Veterinary Association and bid them God-speed.

Some Allergic Conditions in the Dog and Cat *

BY
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Finchley

ALTHOUGH the anti-histamine drugs are now a much used weapon in the therapeutic armoury of small-animal practice, I have the impression that there is need for some clarification of ideas both on the subject of allergy as such and on clinical conditions which may be essentially allergic in character or complicated by some allergic reaction.

I welcome this opportunity to offer you a basis for discussion of this subject since it will help me to crystallise my rather confused thoughts about it.

The term "allergy" was first suggested in 1906 by Von Pirquet to apply to certain altered tissue reactions in response to repeated contact with infections and antigenic agents such as vaccines, tuberculin and foreign serums. Since then the term has been broadened to include abnormal tissue reactions to almost any foreign material. In the human field typical examples of allergic reactions are hay-fever, asthma, urticaria, infantile eczema, contact dermatitis and certain cases of purpura, migraine and gastro-intestinal disturbances. I hope later to show that many of these are closely paralleled by various conditions in the dog.

Anaphylaxis is also an allergic reaction but it is more correctly a term referring to a hypersensitivity reaction induced by parenteral injection of the material causing the reaction. Fortunately, a good deal of work has been done on experimental anaphylaxis in animals and some of the information thus afforded can be translated into clinical entities met in practice. The symptoms of anaphylactic shock differ markedly in the various animal species, for example in the guinea-pig the outstanding feature is bronchial spasm, in the rabbit circulatory failure due to extreme spasm of the pulmonary vessels, in the horse urticaria and skin oedema and, significantly to my mind, in the dog the main symptoms are vomiting, diarrhoea and collapse, believed to be due to a spasm of the unusually muscular hepatic vein with consequent engorgement of the liver and abdominal organs.

Associated with these symptoms in all species is increased capillary permeability similar to that following injection of histamine, yet in some species blood histamine is actually decreased during anaphylactic shock while in others (including the dog) it is increased. However, histamine does not appear to account for all symptoms, *e.g.* loss of coagulability of dog blood, which may be due to release of heparin or some related anticoagulant from the liver.

Allergen is the name given to any substance which can cause an allergic reaction. Basically allergens are probably protein in nature, but as protein occurs in almost everything known to produce hypersensitive reactions—from bacteria to horse-meat—this is not much help to the clinician. Much work has been done in identifying allergens in human allergies, and, as is well known, skin tests are most useful, and it is often possible to desensitise an individual by inoculation with the protein concerned. So far little work has been done on animal allergens and such observations as I may offer are based purely on clinical data. Perhaps this is just as well as a client of mine was suffering from a contact allergy with dermatitis and after tests was told she was sensitive to nearly all metal and must avoid all metal contacts—on asking at the hospital what she was to do so far as cutlery, etc., was concerned she was told she was not allergic to gold or platinum !

Allergens can be divided broadly into contact and alimentary allergens, with correspondingly different clinical syndromes. Sensitivity in an individual usually depends on environmental exposure but there is some evidence that infants may be sensitive at their first contact with certain alimentary allergens, and this, I think, accounts for the common urticaria of puppies, although one can rarely incriminate any article of diet newly introduced prior to the attack.

It is noteworthy that there is a common allergen in all grasses. It is also noteworthy that the basic pathological reaction is a local vasodilatation with increased capillary permeability giving rise to tissue oedema.

I propose to outline some of the conditions I have met in practice, mainly in the dog but occasionally in the cat, which I believe to be of allergic origin or complicated by an allergic factor Several classifications suggest themselves, such as age groups, organs affected (*e.g.* skin) or conditions due to contact or alimentary allergens. I shall not follow any particular classification but shall deal with them rather as clinical syndromes since so much overlapping can occur.

Urticaria

This is a commonly recognised condition of puppies and is in no way serious. It usually occurs in puppies of the three to six months age group, but can occur equally in mature dogs during early adult life. It is probably of alimentary origin. The symptoms are well-known to you all—subcutaneous swellings, usually around the head, commonly involving eyelids, lips and ear flaps, but also often seen over the body and limb surfaces. One curious feature is that whereas in some dogs there is acute irritation and the animal nearly goes crazy rubbing its head and ears, in others the dog is quite unconscious of the presence of the swellings and it is only the owner's sudden alarm at the "puppy's face having swollen up" that draws attention to the condition. In the majority of cases no treatment is necessary but where it is, either owing to the pruritus caused or the owner's panic, injection of an antihistamine, together with the bathing of affected areas with a solution of bicarbonate of soda, is entirely effective. In untreated cases natural resolution occurs in 10 minutes to three hours, occasionally with daily re-

* Paper read to the South Eastern Division, B.V.A., on January 19th, 1956.

currences for a short period. In adult short-coated dogs the actual swellings are not always visible, but tufts of hair rise over small oedematous nodules. I think this is probably an allergy of the infancy first contact type.

Haemorrhagic Gastro-enteritis

This is a syndrome of the greatest possible clinical significance and by far the most serious allergic reaction in small animals other than a true serum anaphylaxis. I have become convinced over the years of its allergic aetiology as a result of various clinical observations, and I was most interested to hear that very keen clinical observer, Mr. Bateman, say recently that he now regarded haemorrhagic gastro-enteritis of the greyhound as being an allergy. The condition is fundamentally one of severe shock and splanchnic engorgement in response to an alimentary allergen ; I imagine it is analogous with the condition which used to be dubbed ptomaine poisoning in man. Symptoms can occur at any time in adult life—I do not recall seeing the syndrome in a puppy—and thus I conclude that it is a hypersensitivity built up over the years as a result of repeated exposure to a given protein. An individual may have one attack in his life or many. I have one old Wire Fox Terrier patient who can be guaranteed to produce an attack if given the smallest amount of horse-meat, and I have recently had a 15½-year-old cross-bred Terrier who is now recovering from her first attack.

It was, I believe, Dr. Hare who drew attention to the fact that the pathology in these cases resembled that of shock and was in no sense an inflammatory condition. Following this line of argument I commenced treating my cases with nikethamide* by mouth at very short intervals and since then my mortality from this condition has been reduced very considerably. The symptoms, I am sure, are familiar to you all. They are those of vomiting, diarrhoea and collapse, varying from fulminating cases which vomit and pass blood *per rectum* from the onset, to those which start a relatively mild vomiting and diarrhoea which gradually worsen into the typical haemorrhagic vomit and faeces we know so well. Temperature is never raised and is usually subnormal. Pulse is soft and sluggish and visible mucous membranes are conjested.

Differential diagnosis is necessary from only two other conditions ; firstly, from subacute infectious canine hepatitis and, secondly, from the terminal phase of uraemia. Virus hepatitis cases often pass a little blood in faeces and occasionally vomit blood, but the differing symptoms are a rise in temperature, a typical hard, thready pulse and an altered heart-beat, together with rather pallid mucous membranes ; the condition is often found in dogs rather younger than those with haemorrhagic gastro-enteritis. Acute uraemia can occur in dogs of all ages ; in the young dog acute leptospirosis is usually the cause, while in the older dog it is usually a flare-up of a long-standing nephritis. In both cases the passage of blood is terminal and careful enquiry usually reveals a typical nephritis case.

Treatment.—In haemorrhagic gastro-enteritis antihistamines are disappointing, probably due to the fact that tissue damage is already severe ; nevertheless, I usually inject an antihistamine as routine, together with a vitamin K analogue to combat heparin release. However, my mainstay is nikethamide by mouth since I believe that repeated small doses are of greater value than one large parenteral administration. My routine is 2 to 10 minims of nikethamide *per os*, given two-hourly in some cases and three-hourly in less acute ones, and repeated regularly regardless of vomiting and regardless of the time of day or night. Glucose in boiled water is permitted every hour in small quantities and, no matter how rapid the recovery, no food is allowed for at least 24 hours after the last vomit ; pre-digested foods† are then administered for the next 24 hours and then a gradual return is made to normal feeding. I have long since discarded subcutaneous saline, believing that one dessertspoonful of fluid by mouth is worth more than 200 c.c. under the skin. Using this regime I find my mortality is now very low, and in fact it is only in peracute cases or in those cases where there has been delay in getting veterinary assistance that the animals die. I insist that any case showing vomiting and diarrhoea, with blood from either end, must be regarded as an emergency and must be seen with the minimum of delay.

It is only rarely that one can incriminate any article of food with certainty, as in my horse-meat Terrier, but it may well be that prepared dog-foods which appear identical do occasionally contain new constituents and are then responsible. Recently I saw a seven-year-old Dachshund who rewarded kindly neighbours who were looking after him for a few days by proving allergic to their diet and throwing a lovely attack of haemorrhagic gastro-enteritis. It was embarrassing to have to insist that the Good Samaritans must stay up all night dosing their " guest," but insist I did.

The action of nikethamide I believe to be mainly anti-shock with stimulation of the circulation, thus relieving the splanchnic congestion and reducing stasis and capillary seepage into stomach and bowel. Haemorrhagic gastro-enteritis is always a worrying and invariably a potentially serious condition, but if this is stressed to the owner together with the fact that recovery will be rapid when it occurs, I find that excellent co-operation and nursing is the rule ; I prefer these cases to be treated at home for the mental ease of the patient.

Acute Wet Eczema

This is probably the last common condition ascribable to a food allergy, and in saying this I do not imply that all cases of acute wet eczema are allergic in origin. There is, however, little doubt that a proportion of such cases is due to ingestion of certain food. One example with which I am familiar is that of a particular strain of Chows, many members of which break out in really severe, suppurating eczematous patches if fed raw meat. This type of case probably accounts for the success of the " change of diet " treatment which is often recommended.

* Coramine Liquid.
† Bengers.

Hypersensitivity to Foreign Protein Introduced Parenterally

This is a condition of great practical importance in both medical and surgical fields of our work. True anaphylactic shock, as is well recognised, occurs when an animal has previously been sensitised by injection of a foreign protein. Fortunately it is relatively rare as it is a most serious, and often rapidly fatal, condition when it does occur. It is not uncommon, however, to encounter dogs which react to injections of non-homologous serum, usually by a violent urticarial type of attack. It is not serious, but very annoying and sometimes difficult to explain in non-technical terms to the owner. I know of two puppies which showed urticarial symptoms following injection of egg-adapted canine distemper virus. Of greater significance, and one which I think is often not recognised is the serous outpouring and the failure to heal of abdominal wounds in which catgut has been used. From time immemorial we have heard of " infection " from catgut, usually coupled with a slanderous denunciation of such and such a make of gut ! I am now absolutely satisfied that, with the exception of truly suppurating wounds, this reaction is a local allergy due to contact with foreign protein. It is quite startling how such a wound will immediately dry up and heal if all gut sutures are removed and replaced by linen thread. I hesitate to introduce personal details but they illustrate this theme so well that I feel it may be excusable to do so. I have three Chows, a mother and two daughters by different sires. Only one has had non-homologous serum and she reacted with a violent and prolonged urticaria ; all three have unfortunately had to have major operations and wound healing was as follows :—

Bitch A.—Caesarean, muscle sutured with catgut, poured serum for four weeks until all sutures had been removed ; same bitch, pyometra, linen thread used, perfect healing.

Bitch B.—Caesarean, catgut sutures used, wound poured serum for six weeks.

Bitch C.—Mother of A and B. Pyometra. This time I took no chances and used linen thread ; perfect healing resulted.

In spite of this, unless I have reason to believe an animal is allergic to foreign protein, I would always use catgut initially as I do prefer an absorbable buried suture and the proportion of reactors is relatively low.

Allergic Rhinitis, Conjunctivitis and Paroxysmal Nocturnal Dyspnoea

These are comparatively minor allergic phenomena, but I am satisfied they do occur and are occasionally of clinical significance.

Allergic rhinitis is, of course, hay fever and I have met a number of cases in dogs. Symptoms are, as one would expect, sneezing and clear, watery nasal discharge ; the dog is perfectly well in all other respects. One of my clients gave a most graphic history when asked what was worrying her about her dog. She said : " He is perfectly well until he sniffs round one particular tree near our house and then he has a paroxysm of sneezing lasting about half an hour and his nose waters for the rest of the day." Injections of antihistamines, supported by oral administration is rapidly effective if the case is bad enough to warrant any treatment.

Similarly, I believe one occasionally meets an allergic oedema of the pharynx. Dogs are often presented with the history that they get periodic attacks of snorting ; if such a case is examined shortly after its onset the pharynx is seen to be puffy and inflamed. Spontaneous recovery in a matter of hours is the rule.

Allergic conjunctivitis I believe occurs most commonly in the cat. The conjunctiva is reddened, there is a watery discharge and occasionally oedema ; these cases do not respond to, and are indeed worsened by, the routine ophthalmic treatments, particularly antibiotics. They may respond to a suitable antihistamine ophthalmic lotion. Some owners have observed that these cases are markedly worsened when the cat has been into a certain part of the garden and that lachrymation gradually ceases after a few hours indoors.

On the subject of *paroxysmal nocturnal dyspnoea* I am on less certain ground, but my belief is that it exists. Affected dogs have periods of very distressed breathing, usually coming on during the night, during which time they are restless and unable to sleep. Examination of the animal when not in an attack reveals no abnormality to account for the recurring dyspnoea, and the empirical use of antihistamine by injection, as tablets, or in an expectorant mixture often affords considerable relief.

The above conditions are in my view contact allergies, arising from contact of allergens (usually vegetable protein) with mucous surfaces, *viz.* nasal mucosa, conjunctiva, pharynx and bronchial epithelium.

Allergic Dermatoses Due to Skin Contact

This group is to my mind the most trying of all allergic conditions with which we have to deal. For one thing, the allergens are so universal. All grasses have a common allergen and there is little doubt that it is grass contact which is at the root of these skin conditions.

The types of skin lesion vary widely but initially, at least, there is one common factor, that pruritus commences, in April-May (according to the season) and coincides with active grass growth, and ceases in September-October when growth ceases. Severe cases of long duration may persist throughout the winter months since there is a certain stage in all skin diseases when the pathological changes which have occurred in the dermis become irreversible.

In dogs of average height and leg length lesions are confined to the under-surface of the trunk, to the legs and feet. In low to ground short-haired breeds (*e.g.* Dachshunds) lesions may cover the whole body.

I would classify these types of cases roughly as follows :—

(*a*) *Those which closely resemble sarcoptic mange* and are often diagnosed as such but fail in a mysterious manner to respond to acaricides. The great point of differential diagnosis is that the ear edges do not show the typical thickened, scaly lesions so inseparable from sarcoptes invasion. Red spots, scabby and infected, or even mere red dots are found in the axillae, under the belly and on the inside and outside of the thighs. Ear flaps may be involved in low dogs.

Once started these cases will recur annually, usually worsening with each succeeding season until a stage is reached when chronic thickening of the dermis occurs, with or without secondary infection. In some cases the thickening of skin and subcutis is so marked that the skin is thrown into rugae. Intense pruritus is invariable.

(*b*) *Erythema of the ears.* These dogs are presented with a history of ear irritation manifest by frequent shaking of the head or scratching of the ears. Auroscopic examination reveals nothing but the ear flap is found to be thickened, red and hot.

(*c*) *A subdivision of the above, with no visible thickening, reddening or indeed any abnormality.* These dogs are presented by irate owners who insist that the dog has canker, to be met by an equally irate veterinarian who says the ears are perfectly clean ! Quite by accident presumably in a mood of despair and seeing the appropriate bottle before me, I injected an antihistamine into one of these cases with miraculous results ; since then I have treated a number of similar cases in the same way and with equally satisfactory results.

(*d*) *Allergic reactions to ectoparasites or bacteria.* Certain dogs and cats react in the most violent manner to the mildest flea infestation and there can be little doubt that this is to some extent an allergic response. Similarly, certain bacterial dermatites are complicated by allergic skin reaction just as the converse can be true.

Some cats develop an allergic type of reaction following long-standing lesions of so-called ordinary eczema, and these are the cases which have been described as responding so well to antihistamines. Such cats have numerous plague-like areas which appear to show surface ulceration, they are usually oozing serum and are sometimes infected.

Treatment of all allergic dermatoses follows somewhat similar lines but is always disappointing in that it can only be palliative and never curative as cessation of therapy and exposure to the allergen, which is usually unavoidable, always means recurrence of the skin lesion and the irritation.

Desensitising products are available in the United States but so far nothing of this sort is available commercially here. As previously mentioned, skin tests have so far not promised well in the dog, and since contact allergens seem to be so numerous in nature any desensitising agent would have to be very polyvalent !

In human allergies desensitisation antihistamines calcium, vitamin B, protective creams and avoidance of contact with known allergenic materials are the order of the day. I have found calcium of little value other than in the white-coated dogs which have a, pinkish irritable skin, a condition that I hesitate to include as allergic. Vitamin B is helpful in all skin conditions and is frequently prescribed.

I propose to try barrier creams on some of my known " allergics " next summer.

Antihistamine Therapy

So far as the antihistamines are concerned I can only offer you my own personal opinion as to relative values. I have tried quite a number of these drugs, whose name is now legion, but I do not pretend that I have by any means given adequate clinical trial to many of them. For parenteral use I have reverted to the original antihistamine, diphenhydramine,* and I find it extremely satisfactory in the dog ; the solution is one containing 10 mg. diphenhydramine per c.c. and I use doses of 1·5 to 5 c.c. repeated daily and at most 48 hourly. It should be used intramuscularly but in one or two " chronics," whose gluteal muscles have become pincushions, I have used it subcutaneously with no disasters : this latter method has the advantage that in selected cases owners can give the necessary injections, whereas I find most untrained persons fight shy of intramuscular injections. The drug is not well tolerated by mouth, but diphenhydramine is incorporated in various vehicles for use as an adjunct to systemic treatment, *e.g.* in calamine lotion,† a most useful and soothing application, in calamine ointment, in a cream base, as an eye lotion,‡ for use in allergic conjunctivitis and in an expectorant mixture which I find useful in what I have called paroxysmal nocturnal dyspnoea and also, oddly enough, in some dogs with pulmonary emphysema.

Promethazine,§ is also very useful, but I find it less effective than diphenhydramine parenterally. Orally it is well tolerated by dogs and cats and as such I use it in conjunction with the former drug in dosage of 10 mg. once or twice daily (preferably at night) for small dogs and cats, and 25 mg. for average sized dogs.

Mepyramine,‖ is a shorter acting antihistamine and thus is not so useful. A cream containing mepyramine is available and is a useful local dressing, particularly for ears.

I have tried a variety of other oral antihistamines which are in vogue with the medical profession but have not found any of them to be of value in small animals. In using these antihistamines for believed allergic conditions one must remember that this is tackling only one aspect of the problem, especially in dermatoses and severe alimentary allergies such as haemorrhagic gastro-enteritis.

Summary

In all skin allergies attention must be paid to protection from contact with known allergens if possible, skin nutrition (*e.g.* vitamin B complex), the value of calcium to decrease skin hyperaemia and the abolition of parasites or bacteria, either of which may take on the character of an allergen. It must always be remembered that once certain chronic changes have occurred in the dermis, whatever their cause, these at some stages become irreversible, hence in cases newly presented which show evidence of prolonged skin reaction prognosis should always be most guarded. Furthermore, seasonal dermatoses such as grass allergy tend to become worse each year, presumably by repeated sensitisation, and it is always essential to warn an owner that the condition will recur annually. In severe cases euthanasia may even have to be considered. While some dogs become allergic to a bacterial infection it is equally true that some allergic dermatoses subse-

* Benadryl, Parke Davis.
† Caladryl.
‡ Benadryl Ophthalmic.
§ Phenergan, May and Baker.
‖ Anthisan, May and Baker.

(*Concluded at foot of col.* 1 *overleaf*)

Enzootic Abortion in Ewes

Prolonged Immunity Following the Injection of Adjuvant Vaccine

BY

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McEWEN & Foggie (1954) reported that a single or double injection of an adjuvant vaccine prepared from formolised infected ovine foetal membrane tissues, precipitated by alum and emulsified in mineral oil, stimulated the appearance of complement-fixing and virus-neutralising antibodies in the sera of sheep, and that these antibodies persisted for 425 days after vaccination—approximately 14 months—the longest period over which the tests were made.

The first part of this paper deals with further tests for antibody in the sera of the vaccinated sheep, the final test being made on sera collected three years after vaccination. The second part is concerned with the resistance of the pregnant ewe to the inoculation of virus during the second pregnancy after vaccination. The third part summarises data on the resistance of vaccinated ewes in the field to infection disseminated at their first and second lambing seasons after a single injection of vaccine.

Part 1

The vaccinated sheep were in four groups as follows:

Group 7 received a single subcutaneous injection of 1 ml. of vaccine.

Group 8 received two subcutaneous injections each of 1 ml. of vaccine at 28 days interval.

Group 9 received a single subcutaneous injection of 2 ml. of vaccine.

Group 10 received two subcutaneous injections each of 2 ml. of vaccine at 28 days interval.

A group of control non-vaccinated sheep, Group 11, was kept along with the vaccinated groups.

The Complement-fixation Tests

Details of the test have been given elsewhere (Foggie, 1954). The mean titres of the complement-fixation test are shown in Table I.

There was a progressive decrease in the titres throughout the period. The decrease was not, however, consistent in individual sera, and at the final test on the sera from animals in Groups 7 and 9 the mean titres were higher than at the tests made on sera collected 28 and 33 months after vaccination. These irregularities in the results of the complement-fixation test do not detract from the interesting and significant finding of the persistence of complement-fixing antibody three years after vaccination.

TABLE I
MEAN COMPLEMENT FIXING TITRES OF VACCINATED AND CONTROL SHEEP

Months after vaccination	14	17	20	24	28	33	36
Group 7	1/260 *n 6*	1/70 *n 6*	1/70 *n 6*	1/32 *n 6*	1/44 *n 6*	1/5 *n 6*	1/58 *n 6*
Group 8	1/834 *n 7*	1/237 *n 7*	1/183 *n 7*	1/161 *n 7*	1/84 *n 5*	1/33 *n 7*	
Group 9	1/551 *n 7*	1/406 *n 7*	1/167 *n 6*	1/101 *n 7*	1/99 *n 7*	1/48 *n 7*	1/102 *n 7*
Group 10	1/560 *n 6*	1/237 *n 6*	1/128 *n 6*	1/54 *n 5*	1/52 *n 5*	1/14 *n 5*	
Group 11 Control		1/5 *n 10*	1/2 *n 10*	0 *n 6*	0 *n 5*	0 *n 6*	1/2 *n 6*

n = Number of samples tested.

Some Allergic Conditions in the Dog and Cat—*Concluded.*

quently acquire a secondary bacterial (possibly even fungal) infection and whichever way this has occurred the condition is then far more serious. Only the most vigorous broad spectrum antibiotics used systemically (chlortetracycline or oxytetracycline*) over a 10-day period at full dosage, repeated if necessary and combined with equally vigorous daily antihistamine therapy, are likely to be effective ; at the same time large doses of the vitamin B complex should be given—all this is a costly proceeding and in view of the inevitable prognosis of probable recurrence most owners are understandably reluctant to undertake it. Humans are prepared to live with their own allergic itch and are quite satisfied with palliative treatment, but few humans are so tolerant of their itching, scratching, biting dog or cat I look forward to the day when a nice broad spectrum desensitising agent is available.

Reactions to injected foreign proteins can be usefully controlled by the antihistamines although I have not found that the previous administration of an oral antihistamine does much to control the very common reaction to phenamidine when this drug is used for demodectic mange.

I have previously discussed the treatment of haemorrhagic gastro-enteritis but I would emphasise again that the antihistamines are here the least important agent ; nikethamide to combat shock and Vitamin K to antagonise heparin release are more important.

Taken by and large the allergic conditions met with in daily practice bring but small reward to the clinician, but I feel sure that an appreciation of the part hypersensitive reactions can play, in quite a wide variety of pathological states, will enable us to approach some of our cases more rationally even if not with greatly enhanced prospects of success.

* Aureomycin, Terramycin.

Serum Virus-neutralisation Tests

The technique of the test has already been described (McEwen & Foggie, 1954). In brief, mice are inoculated intranasally with serum-virus mixtures; eight days later the survivors are killed, the degree of lung consolidation found in each mouse that died or was killed is estimated and is given a score that may range from one to eight depending on the extent of lung consolidation, if present. The mean pneumonia score for each group of mice receiving the same serum-virus mixture is estimated. As an arbitrary standard for the presence of virus-neutralising antibody the mean score for a group of mice given an immune serum must be half, or less, of that of the mean score for mice given normal serum. Aliquots of serum from the sheep in each group were tested and the results are shown in Table II. These indicate that at each test the sera from the vaccinated groups contained virus-neutralising antibody.

TABLE II

SERUM NEUTRALISATION TESTS SHOWING THE MEAN PNEUMONIA SCORE FOR GROUPS OF 20 MICE INOCULATED INTRANASALLY WITH POOLED SERUM VIRUS MIXTURES. MAXIMUM POSSIBLE MEAN SCORE 8

Number of months after vaccination when sheep were bled	Sera from vaccinated sheep				Serum from control sheep
	Group 7 Mean score	Group 8 Mean score	Group 9 Mean score	Group 10 Mean score	Group 11 Mean score
17	0·5	0·5	0	0	5·4
24	0·9	1·8	0·9	2·5	7·6
28	0	0	0·1	0·1	4·3
33	1·05	0·05	0·1	0·15	2·85
36	0·3	Not done	0·4	Not done	5·8

In the above tests the number of sheep in each vaccinated group was the same as that shown in Table I.

A comparative test was made on the pooled sera of Group 7 collected from the 24th to 36th month after vaccination. The sera had been preserved at –70° C. The test is summarised in Table III which again indicates the presence of, and the persistence of, virus-neutralising antibody in the pooled sera from the sheep that received a single injection of 1 ml. of the adjuvant vaccine.

TABLE III

A COMPARATIVE SERUM NEUTRALISATION TEST ON THE SERA FROM SHEEP IN GROUP 7, COLLECTED FROM BLEEDINGS MADE 24 TO 36 MONTHS AFTER VACCINATION, SHOWING THE MEAN PNEUMONIA SCORE FOR GROUPS OF 20 MICE INOCULATED INTRANASALLY WITH POOLED SERUM VIRUS MIXTURES. MAXIMUM POSSIBLE SCORE 8

	Sera from vaccinated sheep Group 7. Number of months after vaccination				Serum from control sheep Group 11
	24	28	33	36	
Mean scores ...	0·5	2·8	1·4	1·5	6·0

The individual sera from the sheep in Group 7 and from one control sheep in Group 11 were tested for virus-neutralising antibody, the animals being bled 25, 28 and 33 months after vaccination. The results of these tests are given in Table IV (*overleaf*) from which it will be seen that 25 months after vaccination all the sheep had virus-neutralising antibody in their sera, but that the sera of sheep 4 and 6 probably contained less than the others. At the test 33 months after vaccination sera 1, 2, 3 and 5 neutralised the virus satisfactorily, but by this time the antibody was deficient in the sera of sheep 4 and 6.

Part 2

Dissemination of the virus occurs when infected ewes are aborting or lambing, and the epidemiological evidence indicates that an abortion or an infected lambing is the result of an infection contracted at a previous lambing season. It follows that if non-infected animals vaccinated before service, in the late summer or autumn, are to be protected against infection disseminated shortly before or during the first, second, or third lambing seasons after vaccination, their resistance should be effective for the periods of approximately 6, 18 and 30 months respectively.

McEwen, Stamp & Littlejohn (1951) injected some ewes shortly before service, with vaccine consisting of a formolised saline suspension of infected ovine foetal membrane tissues, and others with a vaccine consisting of a formolised saline suspension of infected yolk sac material, and found the ewes to be resistant to the subcutaneous inoculation of virus during pregnancy. Sheep injected with these types of vaccine may develop complement-fixing antibody in low titre, a titre that is soon lost, but they do not produce virus-neutralising antibody (McEwen & Foggie, 1954). Both types of antibody are found in the sera of sheep injected with an oil adjuvant vaccine, and McEwen (1954) found that ewes injected with an adjuvant vaccine just before service were resistant to the inoculation of virus during pregnancy.

Hitherto, no vaccinated animals have been submitted to test at the second pregnancy after vaccination, but in view of the long persistence of demonstrable antibodies in the sera of sheep injected with the adjuvant vaccine it was considered probable that ewes immunised with the vaccine would be resistant to the inoculation of virus at their second or later pregnancies after vaccination. To test this hypothesis an experiment was planned in which vaccinated ewes could be challenged at the second, and if necessary at a later pregnancy, after vaccination. The experiment was made possible by the very helpful co-operation of Mr. A. R. Wannop, O.B.E., Director, Hill Farming Research Organisation, and with his permission the gimmers and ewes on the farm Lephinmore, Argyllshire, were used. Enzootic abortion is unknown on the farm and in the district.

Two adjuvant vaccines were tested, one prepared from the infected chick embryo yolk sac membranes and the other from infected ovine foetal membrane tissues. The method of preparation of the former vaccine has been described by McEwen, Dow & Anderson (1955) and of the latter by McEwen & Foggie (1954). In the preparation of both vaccines for the experiment, the results of which are given below, the mineral oil Bayol* was substituted for the liquid paraffin leve B.P. formerly

* Esso Petroleum Co.

TABLE IV

SERUM NEUTRALISATION TESTS ON INDIVIDUAL SERA FROM SHEEP IN GROUP 7. THE MEAN PNEUMONIA SCORES ARE FROM GROUPS OF 20 MICE

Number of months after vaccination when sheep were bled	Vaccinated sheep Group 7 Sheep						Control sheep Group 11
	1 Mean score	2 Mean score	3 Mean score	4 Mean score	5 Mean score	6 Mean score	1 Mean score
25	0·1	0·2	0·05	2·35	0·5	2·3	6·5
28	0·7	0	0·35	3	1·6	3·75	6·2
33	0·1	0·05	1·2	3·2	0·7	4·0	4·4

used, the Bayol being less viscid and providing a vaccine more easily injected. Preliminary comparative experiments with egg yolk membrane vaccine and also with foetal membrane tissue vaccine had proved that Bayol and liquid paraffin leve B.P. were equally effective as adjuvants in stimulating complement-fixing and virus-neutralising antibodies in sheep.

Before vaccination representative samples of the animals of each age group on the farm were bled and the sera tested for complement-fixing antibody. None was found.

Early in September, 1954, a number of the gimmers, and the ewes that had had from one crop to four crops of lambs, were each injected subcutaneously with 1 ml. of yolk sac membrane adjuvant vaccine, and a number received a similar injection of the foetal membrane adjuvant vaccine. It was expected that in the future the yolk sac membrane vaccine would be used in the field, and as the desirability of testing the duration of immunity from this vaccine appeared to be the greater, more sheep were injected with it than with the vaccine prepared from ovine foetal membrane tissues. An appropriate number of sheep were left unvaccinated as controls.

In September, 1955, the oldest ewes, that is, those that had had five crops of lambs, were purchased and brought to the Institute. There they were bled, the sera tested by the complement-fixation test, and the pooled sera of each vaccinated group and the control group tested for virus-neutralising antibody. Tables V and VI show the results of these tests. With few exceptions the sera of the vaccinated ewes fixed complement, and the pooled sera of both vaccinated groups neutralised virus.

TABLE V

SUMMARY OF THE TITRES TO THE COMPLEMENT FIXATION TEST. EWES BLED ONE YEAR AFTER VACCINATION

	Titres			
	Number of sera Negative to 1/5	Number of sera 1/10 to 1/20	Number of sera 1/40 to 1/80	Number of sera 1/160 and higher
Yolk sac vaccine	2	3	15	8
Foetal membrane vaccine	1	0	15	5
Controls ...	31	0	0	0

Rams ran with the ewes from November 21st till December 15th. When between two and three months pregnant, each group of ewes was divided into two sub-

TABLE VI

SERUM NEUTRALISATION TESTS SHOWING THE MEAN PNEUMONIA SCORES FOR GROUPS OF 20 MICE INOCULATED INTRANASALLY WITH SERUM VIRUS MIXTURES. MAXIMUM POSSIBLE SCORE 8. THE POOLED SERA FROM EACH VACCINATED GROUP OF EWES AND THE CONTROL EWES WERE USED

	Yolk sac vaccine Number of sera in pool 28	Foetal membrane vaccine Number of sera in pool 21	Controls Number of sera in pool 31
Mean pneumonia score	0·35	0·95	5·2

groups, balanced as evenly as possible according to service dates, and all the animals were inoculated subcutaneously with virus, 17 months having elapsed since the principals were vaccinated. The virus inocula were prepared from a pool of three freshly harvested and very heavily infected yolk sac membranes emulsified in infusion broth. The ewes in one subgroup of each group received a subcutaneous inoculation of 1 ml. of 1 : 2,000 dilution, and the remaining ewes a subcutaneous inoculation of 1 ml. of a 1 : 200,000 dilution of the infective material.

It is known that the subcutaneous or intradermal inoculation of infected yolk sac into normal, or vaccinated sheep, or into ewes that have previously aborted from the virus infection causes a rapid elevation of body temperature that may reach a peak of 107° F., or higher, on the following day, and thereafter rapidly returns to normal. The experimental ewes were turned out immediately after receiving the challenge inoculation of virus and their body temperatures were not recorded. Unfortunately eight of them aborted a few days later ; six of the eight had received the larger dose of virus. These abortions were not attributed to a virus infection of the uterus or foetus, but were in all probability the sequelae to an acute febrile reaction caused by the inoculation of live virus. The ewes that had these early abortions have therefore been deleted from the experiment and from Table VII that summarises the data relating to the pregnancies of the remaining animals. (*Table VII appears overleaf.*)

Table VII shows that both groups of vaccinated animals possessed a relatively high resistance to the inoculation of virus during pregnancy. It is interesting to record that of the four vaccinated animals infected by the virus one had a titre of 1 : 320, two had titres of 1 : 80 and one a titre of 1 : 40 to the complement-fixation test in September, 1955, a year after vaccination.

TABLE VII
THE IMMUNITY OF VACCINATED EWES CHALLENGED BY THE SUBCUTANEOUS INOCULATION OF VIRUS 17 MONTHS AFTER VACCINATION

Vaccine and infective dose	Number of ewes	Aborted and infected	Total infected	Lambed and not infected	Percentage infected
Yolk sac vaccine					
Sub Group 1 1 ml. 1/2,000 virus	8	1	1	7	
Sub Group 2 1 ml. 1/200,000 virus ...	13	0	—	13	
Totals ...	21	1	1	20	5·0
Foetal membrane vaccine					
Sub Group 1 1 ml. 1/2,000 virus	9	—	—	9	
Sub Group 2 1 ml. 1/200,000 virus ...	10	2	3*	7	
Totals ...	19	2	3	16	15·8
Controls					
Sub Group 1 1 ml. 1/2,000 virus	15	12	12	3	
Sub Group 2 1 ml. 1/200,000 virus ...	13	5	9†	4	
Totals ...	28	17	21	7	75·0

* One ewe died lambing during the night. At autopsy the lamb's head was found turned back. Foetal membranes haemoglobin stained, no macroscopic lesions recognisable, but virus detected on examination of smears from the membranes.
† Four ewes gave birth to full term, strong lambs that had infected foetal membranes. One set of membranes had extensive, two sets moderate, and one set slight macroscopic lesions.

Part 3

In the late summers and autumns of 1953 and 1954 adjuvant vaccines were used in the field. The vaccine issued in 1953 was prepared from infected ovine foetal membrane tissues, and in 1954 it was prepared from infected yolk sac material. Before issue each batch of vaccine was tested on groups of experimental sheep and shown to stimulate a satisfactory production of both complement-fixing, and virus-neutralising antibodies.

It was impracticable to keep control non-vaccinated sheep, but vaccination was confined to known infected flocks and the gimmers only were vaccinated. At the completion of the lambing seasons 1954, 1955 and 1956, returns from many of the farms were received giving the number of vaccinated animals that lambed and aborted respectively. The data regarding the termination of the second and third pregnancies after vaccination are summarised in Table VIII and refer to sheep vaccinated before their first pregnancy in 1953 and 1954 and never revaccinated.

Among non-vaccinated ewes in infected flocks Littlejohn, Foggie & McEwen (1952) found 6·8 per cent. abortion in 10,635 ewes at the second pregnancy and 5·6 per cent. abortion in 6,946 ewes at the third pregnancy. The same authors examined a large number of foetal membranes from both vaccinated and non-vaccinated ewes that had aborted, and estimated that between 1 and 1·9 per cent. of the second and third pregnancies ended in abortion that was not caused by infection with the virus of enzootic abortion. Our experience since 1952 confirms these findings. Furthermore, a number of outbreaks of abortion in both vaccinated and non-vaccinated flocks in areas where enzootic abortion is endemic have been investigated where neither the virus of enzootic abortion nor any other infectious agent could be incriminated even by the inoculation of pregnant ewes with tissues from foetal organs including placentae. If it be accepted that between 1 and 2 per cent. of non-specific abortion occurs, and we regard the acceptance as justifiable, it is evident that vaccination has eliminated or reduced enzootic abortion to a negligible incidence at the most critical pregnancies, namely the second and third.

Summary and Conclusions

The experiments reported in Part 1 of this paper show that the injection of sheep with a killed adjuvant vaccine, gives rise to the production of complement-fixing and virus-neutralising antibodies that persist for three years and probably for longer, and the evidence presented in Part 2 demonstrates the enhanced resistance of the ewe during pregnancy to the inoculation of virus 17 months after vaccination. The data given in Part 3 indicates that a single injection of vaccine protects ewes against infection disseminated in the field at the time of their second and third lambing after vaccination.

The resistance of the pregnant ewe has not yet been challenged by the inoculation of virus at a greater interval than 17 months after vaccination nor has there been an opportunity to obtain information on the behaviour of vaccinated ewes in the field at the fourth

(*Concluded at foot of col. 1 overleaf*)

TABLE VIII
THE USE OF VACCINE IN THE FIELD

Ewes vaccinated as gimmers before service in 1953						Ewes vaccinated as gimmers before service in 1954		
Second lambing after vaccination (1955 lambing)			Third lambing after vaccination (1956 lambing)			Second lambing after vaccination (1956 lambing)		
Lambed	Aborted	Percentage aborted	Lambed	Aborted	Percentage aborted	Lambed	Aborted	Percentage aborted
18,304	291	1·6*	16,182	147	0·9*	21,494	255	1·2*

* The incidence of abortion is no higher than what may be expected from non-specific causes.

Enzootic Abortion in Ewes

The Recovery of the Virus from the Internal Organs of the Aborted Foetus

BY

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STAMP, McEwen, Watt & Nisbet (1950) reproduced enzootic abortion by the inoculation of pregnant ewes with mixed suspensions of stomach contents and of lung, liver, spleen, and kidney tissues from a number of aborted foetuses. They failed to infect chick embryos by the inoculation of individual suspensions of similar materials, although the virus from infected uteri was readily cultivated on inoculation into the yolk sac of six- to seven-day chick embryos, killing the embryos four to nine days after inoculation, by which time large numbers of elementary bodies were present in the yolk sac.

McEwen, Dow & Anderson (1955) claimed that very heavily infected yolk sacs were obtained by using a small infective dose that produced little or no microscopical evidence of infection during the first seven days following inoculation, but killed the great majority of the embryos by the 12th day.

As virus was present in the suspensions of foetal material that infected the pregnant ewes, it was considered worth while re-examining the infectivity of similar suspensions for the chick embryo. Excepting the foetal membranes, the virus has not been demonstrated microscopically in foetal material, and it appeared likely that its presence therein must be in small amounts. Consequently, following the inoculation of six-day embryos with lightly infected suspensions of foetal material the period between inoculation and infected embryonic death might be prolonged to within a day or two of the time of hatching.

Methods

The foetuses examined had all shown extensive lesions of the foetal membranes, cotyledons, and chorion, and a heavy infection of these with the virus. The foetal materials were stored in ampoules at −70° C. for periods ranging from two to six weeks before they were inoculated into chick embryos.

Each foetal tissue, lung, liver, spleen, kidney, together with a small quantity of infusion broth, was disintegrated in a Griffith tube; more infusion broth was then added to give approximately a 15 per cent. suspension of tissue. The suspensions were filtered through nylon and the filtrates used as inocula Foetal stomach contents were emulsified with sufficient infusion broth to give a suspension that could be easily drawn into and ejected from a syring through a fine-bore needle. No antibiotics were used. Each suspension was inoculated into the yolk sac of eight or more six-day-old embryos. From the seventh or eighth day until the 13th day after inoculation the yolk sacs of all dead embryos were examined microscopically for virus, the smears being stained by the modified Ziehl-Neelson method. On the 14th day the remaining embryos were not lamped but all were chilled and the yolk sacs examined microscopically.

Results

The results were collected from 62 bacteria-free suspensions from 13 foetuses. These are summarised in the Table which shows that the virus was cultivated from one or more of the suspensions from nine of the foetuses. It was not recovered from four of the foetuses.

The virus was cultivated on two or more occasions from the five different types of suspension; but from no single foetus were all five suspensions found infected. The infectivity of the suspensions followed no ordered pattern, some infected all the embryos while others infected but one of several embryos. Among the former were the suspension of the stomach contents from foetus 6 and the suspension of lung tissue from foetus 8. All the embryos inoculated with these two suspensions died with infected yolk sacs at a shorter interval after inoculation than did any one of the embryos inoculated with material from foetuses

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Enzootic Abortion in Ewes (McEwen & Foggie) —*Concluded.*

pregnancy after vaccination; but with serum antibodies persisting for three years it is anticipated that the resistance to the inoculation of virus will be of at least similar duration. A single injection of vaccine given before the first pregnancy may therefore confer protection for the normal span of breeding life.

The immunising dose of 1 ml. of the adjuvant vaccine contains one-tenth of the quantity of antigenic material present in the two immunising injections of the saline vaccines formerly used on experimental ewes (McEwen, Stamp & Littlejohn, 1951), and in the field (Littlejohn, Foggie & McEwen, 1952). The saving in antigen and the prolonged immunity following an injection of an adjuvant vaccine make its production and field use economical. The subcutaneous injection of the vaccine may produce a sterile encapsulated abscess that persists. As revaccination for the maintenance of immunity is unnecessary, and entails the risk of multiple abscess formation, it should not be practised.

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TABLE
SHOWING THE RESULTS OBTAINED FROM THE INOCULATION OF SUSPENSIONS OF MATERIAL FROM ABORTED FOETUS INTO THE YOLK SAC OF SIX-DAY CHICK EMBRYOS

Foetus	Weeks pre-mature	Suspension of				
		Stomach contents	Lungs	Liver	Spleen	Kidney
1	6	+	—	+	+	+
2	6	—	—	—	—	+
3	4-5	—		—	—	+
4	4	—	—	—	—	—
5	4	—	—	—	—	—
6	4	+	—	—	—	—
7	3-4	—	—	—	—	—
8	3-4	—	+		—	—
9	–3–4	—	+	+	+	+
10	3	+	—	—	—	—
11	2	—	—	—	—	—
12	2	+	—	+	—	—
13	2	+	+	—		+

+ = Virus cultivated.
— = Virus not recovered.
A blank indicates either the material not available or a bacterial contamination of the yolk sacs.

found to have infection of several organs, suggesting that where only one organ was found infected the infection was not necessarily light. Six suspensions, from foetuses from which two or more suspensions were found infected, caused infection in but one of the several embryos inoculated, and in two instances the infected embryo was still alive at the final lamping of the eggs 48 hours before the chicks were due to hatch.

It is considered probable that all 13 aborted foetuses were infected, but because of inadequate technique the infection was not detected in all of them. Should it be desired to recover a strain of field virus from the internal organs of an aborted foetus it may be concluded that, as the number of embryos inoculated is increased, so will be the chances of the successful recovery of the virus. The virus survives for lengthy periods when kept at −70° C. and it would be economical to examine one tissue or fluid at a time, and should the virus be cultivated from it the remaining materials might then be discarded.

Conclusion

The virus of enzootic abortion may frequently be cultivated from suspensions of stomach contents, lung, liver, spleen, and kidney tissues by inoculating these into the yolk sac of six-day chick embryos, which furnishes a relatively economical method for the recovery of field strains of the virus. On several occasions only one infected embryo has been found out of a number inoculated with the same suspension. The infected embryo may still be alive shortly before the time of hatching, therefore the yolk sacs of all inoculated embryos surviving up to the time of hatching should be examined microscopically before concluding that none is infected.

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Arterial Puncture in Cattle

BY
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ARTERIAL blood samples may be required from cattle for plasma *p*H estimations for electrolyte and blood gas analyses; for estimations of cardiac output by direct Fick or dye dilution techniques; and for metabolic investigations where arterio-venous differences may give important information.

Arterial blood may be obtained in several ways. The use of exteriorised carotid arteries is limited to experimental animals (Van Leersum, 1911). Direct

puncture of the left ventricle is possible but this is not without risk to the animal. Sellers & Hemingway (1951) have carried out carotid arterial puncture in the middle third of the neck, going below the ventral border of the jugular vein, but we have found this method more difficult, unreliable, and disturbing to the cow than the method described below.

The following approach enables arterial samples to be obtained from any bovine animal including clinical cases on farms.

The cow is tethered by means of a halter so that her head is held slightly upwards and to one side. Samples are collected from the brachial artery at the root of the neck where it crosses the first rib. Five ml. of 5 per cent. Procaine + Hyaluronidase are infiltrated subcutaneously at the proposed site of the puncture. The hand is placed under the point of the shoulder as shown. In thin cows the brachial artery can be palpated and rolled between the second finger and the first rib. In fat, thick-necked animals it may not be possible to feel the pulse but arterial blood may be obtained by blind puncture at the indicated site. A 4-inch, 18-gauge, long-pointed needle is directed into the cow just medial to the second finger, parallel to the long axis of the cow and at about 15° to the horizontal. The needle has to penetrate to a depth of 1 to 3 inches. Sometimes venous blood is obtained but this is obvious both from

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The Australian Veterinary Conference

THE Australian Veterinary Association held its 1956 Annual Conference at Brisbane during the last week of May. The one-host cattle tick, *Boophilus microplus*, was the main subject of the Conference, and six of the fifteen papers given were devoted to this parasite. They dealt with its control, and the diseases with which it is associated which represent the major disease problem of N. Australia. The epidemiology of the protozoon infections transmitted by *B. microplus* were reviewed by Pierce, who was concerned with the immunisation and treatment of cattle exposed to these diseases. The immunisation of cattle against babesiosis requires considerable professional skill because of the difficulties of assessing the virulence of the immunising dose, and predicting the response of the recipient. The chemotherapeutic treatment of babesiosis, and now, of anaplasmosis, also requires supervision to obviate relapses, or toxic side effects. Although these methods are valuable in the alleviation of tick-borne diseases, they are not suited for mass treatment, and therefore the accepted, and logical, approach to the problem, is the destruction of the tick.

The complications associated with the eradication of cattle tick were discussed, at length, in several papers. Mulhearn noted that a marked reduction in the number of ticks would deprive the cattle of their naturally acquired immunity to protozoon diseases. In such cases the reappearance, or build up, of the tick infestation could result in severe losses from tick fever; consequently, farmers in tick-infested areas attempt to keep the minimum tick population which would maintain immunity. For this reason, schemes for the eradication of cattle tick aim to extend tick-free zones into tick-infested areas.

A description of a tick-eradication scheme at present in operation in New South Wales was given by Blumer. The first phase of the campaign, which began in January, was the eradication of *Boophilus* tick from 2,000 square miles of territory carrying about 200,000 head of cattle. For this purpose a staff of 750 men, with 367 dipping baths, each bath containing 2,500 gallons of D.D.T. at the concentration of 0.56 pp isomer D.D.T., were being employed. All cattle are to be dipped every 14 days for 15 months. Stringent measures are taken to prevent infested cattle from entering the eradication zone, and these include a quarantine area which is being constantly patrolled, and the removal, or destruction, of all cattle from land on which it is difficult to ensure a complete muster. The cost of this first phase of the scheme is estimated to approach £1,100,000.

Another complication in the control of *B. microplus* is the ability of the tick to develop resistance to the insecticides used in the dipping baths. Insecticides, and resistance to insecticides, were reviewed by Norris, Mulhearn, Blumer and Legg. Resistance to arsenic was first detected in Australia 15 years ago, since when this resistance has extended to B.H.C., toxaphene, and lastly to D.D.T. Evidence was quoted which indicated that resistance to B.H.C. was rapidly followed by resistance to toxaphene, chlordane, dieldrin, aldrin, endrin and isodrin, but not D.D.T. The resistance to D.D.T. developed by ticks in Queensland is therefore a cause for concern in Australia, and represents a potential threat to the success of the tick-eradication campaign in New South Wales.

As an alternative to the chlorinated hydrocarbon insecticides, to which resistance has developed, the organic phosphorus compounds are receiving attention, and malathion and diazinon were mentioned as being potent acaricides which might prove of value for the control of tick. A disadvantage of these compounds in their relative lack of stability in a dipping bath which restricts their application to spraying. In this connection Legg commented favourably on the new power spraying outfits for cattle, which effected an economy in the insecticidal wash used, and thereby encouraged the user to replace the wash more frequently than when a dipping bath was employed.

The factors which influenced the susceptibility of cattle to tick infestation were investigated by Riek, who noted that licking was a potent factor in reducing the numbers of larvae which attached to a beast. There was a marked individual variation in the tick burden carried by a beast which appeared to be the result of a hypersensitivity to the tick saliva, as a result of which there was an abundant serous exudation following the attachment of the tick, which was detrimental to feeding of the parasite. The irritation caused by the reaction also incited the animal to lick itself and dislodge the ticks. This hypersensitivity, which could be lifelong, was associated with a large number of mast cells in the dermis. Cattle with Zebu blood developed hypersensitivity to a greater degree than cattle of European origin.

The occurrence of bovine malignant catarrh among cattle in New South Wales was described by Duncan and Pearson. This disease, which is a virus infection, is recognised clinically as a keratitis, with a nasal discharge, and inco-ordination. Later there is

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Arterial Puncture in Cattle—*Concluded.*

the colour and the flow rate; slight withdrawal and redirection of the needle upward is then necessary. A sterile needle is used for each puncture. After use each needle is resharpened on a fine carborundum stone.

The technique described has been used routinely and in herd sampling to obtain about 150 arterial blood samples from cattle of all ages, including very young calves. As many as 10 cows have been bled in 45 minutes. As yet there has been no subsequent complication in any animal, and in the herd samplings no marked drop in milk yield. A few animals have been bled daily for up to seven days. There is less disturbance to the animal than in many cases of jugular puncture.

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In Brief

THE FAT CONTENT OF COWS' MILK

UNTIL a few years ago it was considered that, providing cows were adequately fed, changes in the diet had little effect on milk composition; but it has now been shown that too low an intake of roughage seriously affects the fat content. McClymont (1950) has reviewed a series of instances in which the fat content was depressed under grazing conditions due to a shortage of roughage in the diet. Balch *et al.* (1952) found that a ration with a low roughage content, such as 6 lb. of hay or less per day, and a high concentrate intake, significantly reduced the fat content of the milk yielded by cows in the first half of a lactation, but that changing to diets with very low roughage contents had little effect when the animals had been in milk for more than about 26 weeks, even if they were still yielding well. Balch *et al.* (1954) recorded that with diets containing 4 lb. of hay per day, the fall in fat content is rather slower if the concentrate ration contains 22.3 per cent. of protein than it is with a concentrate ration containing 11.6 per cent. of protein.

Balch *et al.* (1953) found that 8 lb. of hay ground to a fine powder had a much more pronounced reducing effect than a similar quantity of hay given in the usual long state, although, obviously, the fibre content was the same. They also found that the addition of 5 lb. of dried ground delignified straw pulp containing 3½ lb. of crude fibre to low fibre diets did not bring about any recovery in fat content. Observations on the changes in rumen conditions showed that the consistent, and presumably essential, characteristic of diets that depressed fat content, was the lack or absence of the physical property of "fibrousness." The main chemical change in the rumen when the milk-fat content was depressed was a fall in the amount of acetic acid present. It has been shown by Popjak *et al.* (1951a) that acetic acid is absorbed from the rumen and is a source of ruminant milk fat, being built into saturated fatty acids (Popjak *et al.*, 1951b).

Leech & Bailey (1953) reported that the treatment of cows with galactopoietic doses of thyroxine or iodinated casein caused an increase in daily milk yield, and that although there was a depression of its fat content. there was a slight increase in the total yield of fat. Brumly & Hancock (1955) found that daily subcutaneous injections of growth hormone caused a marked increase in milk production, and that as there was no significant difference in the fat content, the total fat yield was also markedly increased.

J. O. L. KING (Oct., 1955).

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BRITISH HORSE SOCIETY CHAMPIONSHIPS

Readers of THE RECORD will wish to congratulate Miss K. M. Morant, M.R.C.V.S., who won the medium dressage test at the National Dressage Championships held at Camberley on September 29th. Miss Morant, riding "Bella," beat such well-known riders as Mrs. Johnstone, a past winner of the event and an Olympic competitor.

APPOINTMENTS TO MEDICAL RESEARCH COUNCIL

The Committee of Privy Council for Medical Research, after consultation with the Medical Research Council and with the President of the Royal Society, have appointed Professor George Payling Wright, Sir William Dunn Professor of Pathology, Guy's Hospital Medical School, and Mr. Denis Hill, senior lecturer in Clinical Neuro-physiology, Maudsley Hospital, London, and physician and lecturer in Psychological Medicine at King's College Hospital, to be members of the Medical Research Council.

Lord Limerick and Sir Geoffrey Vickers have been reappointed to the council for a further term of office.

The Australian Veterinary Conference—*Concluded.*

separation of the horn of the feet, a croupous inflammation of the buccal cavity, and nasal mucosa, with a gastro-enteritis. The disease has a high mortality.

Another new disease entity, this time among poultry in Queensland, was the subject of a paper by Cottew. The birds suffered respiratory distress, manifested by coughing, and a mucoid nasal discharge. The morbidity was high but mortality low. Pleuropneumonia-like organisms were isolated from the discharges of the birds, but the precise aetiology of the disease was not determined.

Francis contributed a paper on the methods of infection and immunity in fowl pox. He observed that in addition to contact and mosquitos, the disease could be transmitted by exposure to airborne infective particles. However, further work suggested that exposure to a fowl pox dust, or spray, only occasionally produced lesions, but induced a good immunity.

Among the other papers read to the Conference was a survey of hydatid disease in New South Wales by Gemmell. An analysis of the results showed that 25 per cent. of all sheep dogs carried *Echinococcus granulosus*, and that 60 to 70 per cent. of all adult sheep carried hydatid cysts. D. W. J.

News and Comment

THE CLOSING MEETING OF CONGRESS

The closing meeting of Congress was held at the Town Hall, Leamington Spa, on Saturday, September 22nd, with Mr. E. Wilkinson in the Chair. The first matter of importance on the agenda was the presentation of the Dalrymple Champneys Cup and Medal. In making this presentation Mr. Wilkinson said he was particularly honoured, on behalf of Sir Weldon, in asking Mr. R. H. Smythe to accept the award. It was made each year for outstanding work in various fields of veterinary activity over the previous 10 years. Mr. Smythe was well known to many hundreds in the profession and little need be said as to his attainments as a clinician.

In accepting the award, Mr. Smythe said:—

" If my complexion looks a little more ruddy than usual it is simply because blushes have come to my cheeks as a result of the very flattering words which the President has just addressed to you. When I received the letter from Mr. Knight I was naturally flabbergasted and, as all good clinicians do, I said to myself ' I wonder why?' and after cogitating over the matter I came to two possible conclusions; one of them was that the Selection Committee desired to do some honour to that very valuable community of people who never sleep, work all the time, and seldom eat—the practising veterinary clinicians. If the Selection Committee regarded me as a typical practitioner of this country, and on that account presented me with this Cup and Medal, I think that, in itself, is one of the greatest compliments they could have paid me."

Votes of Thanks

Mr. E. R. Callender, in proposing a vote of thanks to the Mayor and Corporation of Royal Leamington Spa, observed that they were rapidly approaching the end of what for him was one of the happiest Congresses it had been his privilege to attend. Many factors contributed to the success of a Congress, and in this particular instance one of the most important was the act of the Mayor and Corporation of Royal Leamington Spa in placing at their disposal the Town Hall as their centre. Two excellent halls had been provided as well as adequate office accommodation and, in addition, they had all received the utmost courtesy from everybody from His Worship the Mayor down to the lowest official. For that they were deeply grateful. Their gratitude went to the Deputy Mayor for his presence the previous Monday to give them a warm welcome. They were all made to feel at home and as though they were starting off on the right foot. The civic reception on Monday evening had been delightful

Mr. S. V. Collard, Chairman of the Provisional Committee, in proposing a vote of thanks to the Warwickshire County Council, referred to the previous Tuesday—it seemed a long time ago—when they went to Moreton Morrell for a close-circuit television demonstration. The facilities provided on that occasion by the Warwickshire County Council were all that could be desired. They were grateful to the Council and to the Chairman of the Agricultural Education Committee, Alderman Hughes, and very much so to Mr. Foster, the Principal, and to his

THE NEW PRESIDENT IS INVESTED

This photograph was taken immediately after Mr. Wilkinson had invested Mr. Callender with the Presidential regalia.

The Hon. Secretary of the Provisional Committee and of the Midland Counties Division, Mr. J. H. McGhee, with his wife.

Assistant. When the number of people who arrived was far in excess of that expected Mr. Foster's reaction was simply to take the matter in his stride and provide them all with an excellent tea.

Mr. H. E. Bywater (Hon. Treasurer) then proposed a vote of thanks to the Midland Counties and the East Midlands Divisions for their welcome and Sunday evening " At Home " and for the assistance given by their members. He said that if any functions were to be successful they must have a good start. Much of the success of the Congress was due to the " get-together " given them by the two Divisions. Everyone appreciated such hospitality, and, as one more prone to give than to receive, at any rate on the Association's behalf, it was gratifying to him to offer thanks for a most delightful welcome.

Mr. J. McC. Ingram (Hon. Secretary), in proposing a vote of thanks to the authors of papers, openers of discussions, demonstrators, and the chairman and recording secretaries of meetings, believed the value of a Congress must depend materially upon the skill and assiduity with which those he was thanking performed their task throughout the week. There was not the slightest doubt that all concerned had performed their duties magnificently, and everyone would welcome the opportunity to express appreciation of the sterling efforts that had been made.

The President said that he was entrusted with the satisfying duty of proposing a vote of thanks to the Provisional Committee. He hoped others on the Committee would excuse his emphasis of the work done by what might be termed the inner executive committee. They, with one or two others, started working for the Congress nearly two years ago, their duty being to spy out the land and make all those enquiries which were entirely necessary in order that final decisions could be made by the full Committee later on. He hoped those who had carried the burden of that work would excuse him if he did not name them individually, but two must be named.

To Mr. S. V. Collard, the Chairman of the Provisional Committee, they gave most grateful thanks, for his help had been indispensable.

The President asked that the vote be accorded before he referred to the other member he was going to name, and this was done.

He went on to say that it was a truism to say the success of any Congress was a measure of the work of the local secretary. His was an immense job. He must be prepared to sacrifice a great deal of his scant leisure time to the well-being of all of them during the week. They would all agree that for a very busy practising veterinary surgeon to take on such a task represented more than a little in the way of personal sacrifice. That John McGhee had done such work for them was something for which they could never compensate him adequately, but as a token of regard and affection they asked him to accept a gift from them all. The gift was a clock, a replica of that at Mansfield Street, and they trusted it would long be a reminder of his most valuable service to the Leamington Congress of 1956.

Mr. J. H. McGhee, T.D., M.R.C.V.S., Hon. Local Secretary, having received the clock from the President, said it had been a great pleasure to serve the President and the Association. The work was most interesting, and not quite as onerous as they had been led to believe. It was most kind of them to make a gift to his wife and himself. As the clock ticked away it would surely be like the sun dial and record only the sunny hours. (Applause.)

Messages to Congress

The President then invited any who had messages for the Congress to deliver them.

Mr. L. N. Thornton said it was a privilege for him to convey greetings from the Australian High Commissioner and the President and members of the Australian Veterinary Association. The hospitality that had been extended to his wife and himself at the Association's very successful 1956 Congress was something for which he was most grateful. Experience of three Congresses of the B.V.A. had taught him that each was better than the last, and he wished the Association every success in the future.

Mr. C. V. Dayus offered thanks on behalf of the High Commissioner for New Zealand for the Association's kind invitation to him to be a delegate. The hospitality given him while in Leamington made him sincerely indebted to them all. The President and Council of the New Zealand Veterinary Association sent very cordial greetings. It would be recalled

that the current President was Dr. Hopkirk who had attended previous meetings of the B.V.A. (Applause.)

Dr. K. Eriksen said that, representing a veterinary association of a very small country, it was an adventure for him to be present at the Congress. Listening to the proceedings throughout the week had shown clearly how very similar conditions were in the profession in other countries. The Danish Chief Veterinary Officer, on his return from Belfast in 1955, said that whenever or wherever one came into contact with British veterinary surgeons there was a spirit and atmosphere not found anywhere else. That was a very true observation. Dr. Eriksen and his wife had received so much kindness and hospitality in Leamington that they would carry away memories which would last for ever. The Danish Veterinary Association, whose President regretted his inability to be present, wished to express its most cordial appreciation for the opportunity it had been given to be represented at the Congress.

Mr. D. Robertshaw, representing the Student Societies, thanked the Association for their cordiality and hospitality. The Societies' representatives would take back many treasured memories of the week. It was refreshing to see that the profession had such an active Association behind it whose endeavours contributed largely to the fact that many members were benefiting greatly from better educational facilities. The result was that those who entered the profession did so with a greater backing than had existed before. (Applause.)

Induction of the New President

Mr. Wilkinson said they now came to what was for him the most important item of the meeting. Before divesting himself of the Presidential gown and chain of office, he wished to pay a tribute to many people. To all members of Council, to all members of the many committees, and most particularly to all committee chairmen, he said a heartfelt " thank you." He would never forget the way they had rallied round their President during the past year.

To all members of his home Divisions, the Midland Counties and East Midlands, he wanted to say how much their support had helped him in his work for the Association. To brother veterinary surgeons in practice in and around Derby—not forgetting one who had passed to a better land since his (Mr. Wilkinson's) election as President-Elect—he wished to say how much he valued their support during what must be a difficult year for any practitioner. To colleagues in his own practice, whose additional duties were so willingly undertaken so that he might be released so often, he said, " Thank you for all you have done."

Lastly, he could never have carried out the Presidential duties at all had it not been for the never-ending help of his wife. It would, perhaps, surprise many to know how many days and nights she had been on duty, and on behalf of the Association as well as himself he wished to thank her.

It was now a very great happiness to ask Mr. Ernest Callender to rise so that he might be invested with the insignia of office. Mr. Callender's great qualities had already been told and there was no need to reiterate them.

The induction having taken place accompanied by the most hearty applause, Mr. Callender said:—

" The mantle of Elijah has fallen; whether it has fallen upon Elisha time alone will tell. I am not in the normal course an emotional fellow at all, but I would be less than human if I were not very deeply touched by the reception you have accorded me. Thank you from the bottom of my heart.

" To be elected as President of this great Association is a very high honour, and my first feelings are those of deep gratitude to all of you. In accepting office I fully realise the magnitude of the task I have undertaken. I am not unmindful of my own limitations, but having seen the support and loyalty from a fairly close angle which has been accorded to the Presidents of this Association I am sufficiently conceited to think we shall pull through.

" In arriving at my decision to accept office I received support and encouragement from many quarters—from the President, not forgetting his very gracious lady; from the Officers; from members of Council, and from all ranks of this Association. I received support and encouragement from very many of my colleagues in the Animal Health Division, and I must express my appreciation of the fact that there are so many of them here to support and encourage me this morning. Last, but by no means least, I was encouraged by my wife (Applause) who, fully realising that it would of necessity mean considerable periods of loneliness for her, nevertheless urged me to accept and, as she put it, ' Do your best.' I promise you I shall do my best. I hope that best will be good enough." (Applause.)

The new President then proposed a vote of thanks to " two who have served the Association nobly and well, " the retiring President, Mr. Edward Wilkinson, and the retiring Senior Vice-President, Professor Alexander Robertson. He would preface his remarks with an expression of deep appreciation of their respective wives, for all that those ladies had done for the Association.

Edward Wilkinson had proved himself in every way a most worthy President, conducting affairs with great dignity and marked efficiency, and had earned the gratitude of them all. His outstanding qualities were modesty, deep sincerity, and high integrity. How he had combined the running of an extensive practice in Derbyshire with the equally successful conduct of the Association's affairs it was difficult to imagine, but he had done so and they were grateful to him. (Applause.)

It was difficult indeed to compress into a few words a proper appreciation of all that Alex Robertson had done for the Association. But the task was made easier because everyone was fully aware of the strenuous and invaluable efforts made by him. Although he now was no longer an Officer, they hoped to enjoy for many years to come his great wisdom and sound judgment as well as his nimble Scottish wit to enliven their proceedings.

THE AGRICULTURAL RESEARCH COUNCIL

The Committee of Privy Council for Agricultural Research have appointed Mr. R. E. Glover, M.A., B.SC., F.R.C.V.S., to fill a vacancy in the membership of the Agricultural Research Council caused by the resignation of Professor G. R. Cameron, F.R.S. They have reappointed Professor S. J. Watson, M.SC., D.SC., F.R.I.C., F.R.S.E., for a further term. Professor Watson will continue to act as Deputy Chairman of the Council.

Our readers will recall that Mr. Glover previously held the Chair of Veterinary Pathology in the University of Liverpool. He is a founder member, and has been President of the Veterinary Research Club, and is a past President of the Royal College of Veterinary Surgeons. He has been both President and Hon. Secretary of the Section of Comparative Medicine, Royal Society of Medicine, and is a member of the editorial board of the *Journal of Comparative Pathology and Therapeutics*.

EMERITUS PROFESSOR G. H. WOOLDRIDGE

After 33 years of service Emeritus Professor G. H. Wooldridge, F.R.C.V.S., M.R.I.A., retired from membership of the Council of the Royal College of Veterinary Surgeons at the Annual General Meeting in June of this year. To say farewell to this period of his life of long service to the veterinary profession, he and Mrs. Wooldridge gave a luncheon party at the Russell Hotel on Wednesday, September 26th, to his former colleagues on the Council and to some of his personal friends outside the Council.

There were no set speeches, but, after Professor Wooldridge had asked his guests to drink a Loyal Toast, Professor L. P. Pugh, President of the Royal College, rose to propose the toast of Professor and Mrs. Wooldridge, or as everyone knew them, " Uncle George " and " Auntie Elsie." He said that Uncle George's conception of this lunch was but one example, throughout a long life of service to the profession, of his thought for a charming gesture at an appropriate moment. Professor Pugh recalled that so long ago as 1907 he had first become aware of Uncle George's kindly nature. In those days, as now, there was a cup, presented incidentally by Uncle George, which was competed for between the students of the London and Dublin Veterinary Colleges. Professor Pugh recalled travelling to Dublin, with the London team, with what seemed to be little hope of success. There had been a narrow and unexpected victory for London and after their kind Irish hosts had more or less literally placed the victorious team on the homeward-bound boat, the post-enjoyment reaction had set in. But what a surprise and welcome there was for the team at the London station, for there was Uncle George with a multitude of students waiting, and whilst the victorious team had not known what to do with the cup, Uncle George filled it with champagne.

For the President, their host was ever the symbol of a vanished but great age in the life of our country. His presence on the Council would be missed, and he would ever be remembered.

On the proposition of the President, the company drank the toast to their host and hostess with long acclamation.

When Professor Wooldridge rose to reply it was obvious that he was very conscious of the spirit of the occasion. He thanked the President for his kind words and his friends and colleagues for being with him and his wife on this day. His mind went over the long years in the veterinary profession and he saw the generations of students who had passed through his hands and were now mature men upholding the prestige of the Royal College in every part of the world.

He was happy that the President had recalled some of the pleasures of other days, of relaxation after games and study. He recalled visits of the Dublin students to London for the cup he had given, and how all concerned would adjourn in the evening to the Oxford Music Hall, which now no longer existed. Such was the enthusiasm of some of the students that they felt impelled to join in the performance on the stage, and after having been ejected by commissionaires through the Oxford Street entrance they would rejoin the festivities through the Tottenham Court Road entrance, with the result that the Principal of the Royal Veterinary College, Professor Shave, that greatest of men, awakened by telephone calls from Marlborough Street Police Station, had to proceed in a four-wheeler cab to the rescue and bailing out of his students.

Mr. Howard Dawes, past-President of the Royal College, in speaking of his affection for Professor Wooldridge, asked if he might join in his tribute to his wife. Mr. Dawes recollected her kindness to him as a young undergraduate, a kindness which had been given to so many young students.

The company, including Professor Wooldridge, then rose to drink the health of " Auntie Elsie."

In addition to the President, the Officers, and Members of Council of the Royal College, there were present the following former colleagues on the Council and personal friends of Professor Wooldridge: Mr. Howard Dawes, Mr. and Mrs. H. C. P. King, Professor J. McCunn, Mrs. Pugh, Mrs. Glover, Mrs. W. R. Wooldridge, together with Mr. Oates, Mr. Francis, and Miss Raymer of the College staff.

DR. W. M. HENDERSON

Dr. W. M. Henderson, who is at present Deputy Director of the Research Institute (Animal Virus Diseases), Pirbright, Surrey, has been invited to accept the appointment of Director of the Pan-American Foot-and-Mouth Disease Centre, Rio de Janeiro, Brazil, and is taking up his duties in January, 1957. This international centre began in 1951 as a Technical Co-operation Project of the Organisation of American States. The operation of the Centre is the responsibility of the Pan-American Sanitary Bureau which is the regional office of the World Health Organisation. The work of the Centre is the training of national laboratory and field staffs responsible for the control of foot-and-mouth disease in the Americas, the provision of a field consultation

and confirmatory diagnostic service, and research. It is now intended to expand the research facilities and activities.

Dr. Henderson was born in Edinburgh on July 17th, 1913, and was educated at George Watson's Boys' College, the Royal (Dick) Veterinary College, and the University of Edinburgh. He qualified as M.R.C.V.S. in 1935 and B.Sc. in 1936. From 1936 to 1939 he was assistant to Professor George F. Boddie, Professor of Medicine at the "Dick." In January, 1939, he was appointed research officer to the Pirbright Research Institute to work on foot-and-mouth disease and other vesicular diseases of animals. When the post of Deputy Director was created in July, 1955, his abilities were recognised by his selection for the post.

During the 17 years at the Institute he has made many outstanding contributions to the advancement of knowledge on foot-and-mouth disease. He has been responsible for developing many new methods which are now recognised as standard procedures for research on the disease and for the control of the preparation of vaccines. His researches have been extensive and of a fundamental character, and he has made notable contributions to the literature.

He was awarded the degree of D.Sc. of the University of Edinburgh for a thesis on the "Quantitative Study of Foot-and-Mouth Disease." It is of interest that the method of virus estimation with which this deals is now known as Henderson's method and is widely used in many research institutes.

He is a member of the council of the British Veterinary Association, and a past President of the Central Veterinary Society.

ANNUAL GENERAL MEETING OF THE LADIES' GUILD, V.V.B.F.

The 25th Annual General Meeting of the Ladies' Guild was held in the Town Hall, Leamington Spa, on Tuesday September 18th, 1956. The President, Mrs. J. N. Ritchie, welcomed the following ladies: Mesdames D. Boddie, H. E. Bywater, D. Callender, J. Clark, B. Claxton, M. Collard, A. Corrigall, J. Garside, D. Glover, B. Hill-Owens, P. Holroyd, D. Jennings, M. John, K. Kelly, B. Luke, D. Mather, C. Macmillan, M. Morgan, D. Motton, E. McF. Jones, B. Pugh (Cambridge), E. Pugh, F. Ritchie, S. Ritchie, M. Roberts, J. Robertson, E. Stotees, J. Thomson, and M. Wright.

Minutes and Correspondence

The Minutes of the 24th Annual General Meeting were taken as read and were approved and signed by the President.

A précis of letters of appreciation from grateful recipients were read.

A letter of thanks from Mr. W. Francis, secretary of the V.V.B.F., was read, expressing the warm appreciation of the Fund towards the Ladies' Guild.

A letter of condolence had been written to Professor J. G. Wright and his family expressing deep regret at the loss of his wife, a past-President of the Guild. Professor Wright had replied thanking the Guild.

Sincere thanks were once again offered to Professor T. J. Bosworth, for his kind co-operation as Auditor, and to Mr. Knight and Miss Smith of the B.V.A., and Mr. Francis at the Royal College.

It was agreed that a letter be submitted by the secretary to all Divisions, asking for the co-operation of all wives of members of the B.V.A.

A vote of thanks was passed to the President, Hon. Treasurer, and Hon. Secretary, for the work they were doing on behalf of the Fund.

Hon. Secretary's Report

It was unanimously agreed that the Spa Ballroom was one of the most exquisite settings for the Dance. The Guild was indebted to the local ladies for their co-operation and good will, and grateful thanks were accorded to them.

The past year had been remarkably successful, and members were astonished to hear of the amount raised. They could be proud of their achievement.

Election of Officers

The following Officers were elected to serve for another year: *President*, Mrs. L. P. Pugh; *Hon. Treasurer*, Mrs. D. I. Glover; *Hon. Auditor*, Professor T. J. Bosworth, and *Hon. Secretary*, Mrs. B. W. Hill-Owens.

Treasurer's Report

The Hon. Treasurer said: "This year has been a very special year for the Ladies' Guild. Once again the Divisions have given wonderful support. We must mention the Scottish Division which goes from strength to strength. The amount realised by the Dance and Ballot at Belfast also was a record. We have a balance of £1,575, and to be able to announce this gives me more pleasure than I can convey. Most sincere and heartfelt thanks are due to every member and to all our friends who support the special efforts."

The following are the details of amounts received:—

	£	s.	d.
Proceeds of Dance at Belfast (£358 9s. 6d.) Ballot (£177 7s. 2d.)	535	16	8
N. Ireland	42	0	6
Eire	130	11	1
N. Wales	50	0	0
S. Wales	135	0	0
Midlands	9	19	6
Lancs and Cheshire	23	8	0
Subscriptions and donations	69	16	6
Dance arranged by Mrs. J. N. Ritchie	73	11	0
Scottish Branch subscriptions and donations	85	9	0
Dance at Ayr arranged by Mrs. Wilson	120	0	0
,, ,, Dumfries—Mrs. Sangster	74	13	6
,, ,, Penrith—Mrs. Barr	55	17	0
,, ,, Aberdeen—Mrs. Service	71	8	0
,, ,, Edinburgh—Mrs. Mitchell	61	12	0
,, ,, Kircaldy—Mrs. Ferguson	31	6	0
	£1,570	0	9

It was resolved to allocate the following sums:—

V.V.B.F. donation for current relief	925	0	0
V.V.B.F. donation Special Gift Fund	600	0	0
	£1,525	0	0

LEARNING AT LUNCH

During Congress week the President continued one of last year's happy innovations by entertaining to lunch, each day, various bodies whose work had contributed to the annual gathering. Mr. and Mrs. Wilkinson presided informally at table over the Press, the commercial exhibitors, the Officers of the host Divisions and others; and these others included the readers of papers.

From time to time readers of this journal have hinted that their scientific colleagues, with their addiction to graphs, their almost pathological passion for tables, their esoteric language, and their habit (if we may draw attention to it) of saying " along with " when they mean " together with," must be something other than human. But this is not so.

While enjoying the President's hospitality we were able, from a position of vantage at table, to take stock of his other guests, to note their general habit, and to join, however haltingly, in their conversation. Thus we are able to report that their appearance is engaging—being more hirsute than might generally be expected—their tailoring unexceptionable, and their manners ingratiating. They appear to respond to moderate doses of alcohol, taken orally, and the ingestion of food stimulates in them a fair degree of noise. Contrary to the general belief they have heard of veterinary surgeons in practice, and declared, indeed, their absolute determination to be of service to them, graphs and all.

THE R.C.V.S. OFFICE AND LIBRARY

Will readers kindly note that the Office and Library of the Royal College of Veterinary Surgeons will not open on Saturday mornings after Saturday, October 6th, 1956.

ANDRE MAYER FELLOWSHIPS

The Food and Agriculture Organisation has established a number of André Mayer Fellowships with the object of fostering research in the field of food and agriculture. The late André Mayer was closely associated with scientific research in France as well as with work in the international field, particularly in relation to F.A.O. Only those with the highest qualifications, who have already shown a strong inclination and a real aptitude for research work, and who would benefit from additional training will be selected.

Five or six Fellowships will be offered in 1956, and will be spread over the whole field covered by F.A.O., *i.e.*, agriculture, agricultural economics and statistics, fisheries, forestry, and nutrition. Awards will be given for periods up to two years, with the possibility of an extension to a maximum of 30 months, and payment is expected to be at the rate of $250 per month. Further information about these Fellowships can be obtained from the Secretariat of the F.A.O. National Committee for the United Kingdom, c/o Ministry of Agriculture, Fisheries and Food, 10, Whitehall Place, London, S.W.1.

FOWL PEST

To reduce further the incidence of fowl pest, the Minister of Agriculture and the Secretary of State for Scotland, acting jointly, have made a new Order, The Live Poultry (Restrictions) (Amendment) Order, 1956, the main effect of which is to prohibit the holding of markets, fairs, or sales of store poultry in England and Wales during the period from October 1st to December 31st each year. Copies of the Order may be obtained from H. M. Stationery Office, price 3d. net.

The new Order does not apply to licensed sales of poultry intended for immediate slaughter that are authorised by local authorities under Article 5 of the Live Poultry (Restrictions) Order, 1954. Poultry keepers and other persons who move birds to licensed slaughter markets are reminded that such movement is prohibited unless the tail feathers of the birds (not being geese and ducks) are clipped back so that not more than half their original length remains.

UNIVERSITY NEWS

Liverpool

FACULTY OF VETERINARY SCIENCE

1st Examination. Part I (Chemistry)

Hudson, R. H.; Hughes, Margaret; Nairn, A. D.; Procter, G.; Thomson, Judith A.; and Westbrook, R.

Part II (Physics)

Westbrook, R.

Part III (Botany)

Westbrook, R.

Part IV (Zoology)

Green, P. B., and Westbrook, R.

3rd Examination. Part I (Pharmacology)

Alderson, Valerie A.; Beadle, G. G.; Davies, A.; Macarthur, G. J.; McFarland, A. G.; Procter, G. M., and Vivian, J. S.

Part II (Veterinary Pathology, including Microbiology and Parasitology)

Ashcroft, R. A.

Final Examination

Birks, Margaret, and Williams, Rosemary J.

MRS. J. B. BUXTON

The funeral of the late Mrs. J. B. Buxton took place at Streatley Church on September 24th. The Service was conducted by the Rev. Canon Theophilus, and Mrs. Holder was at the organ. Members of the family present were: Dr. and Mrs. J. C. Buxton, Dr. and Mrs. A. Buxton, Mr. F. G. Buxton (brother-in-law) and Mrs. Buxton, Mr. D. G. Buxton (nephew), Mrs. R. Baker (sister-in-law), Mr. E. Buxton (brother-in-law), Miss J. Baker (niece), Mr. and Mrs. L. Bliss, and Miss M. Huntley.

Among other mourners were: Mr. R. E. Glover, Principal of the Royal Veterinary College (representing also the R.C.V.S.), Mr. H. W. J. Adams, Bursar (also representing Major Christopher York, the College Treasurer), Professor H. Burrow, Professor and Mrs. R. Lovell, Mr. H. R. Allen, Mr. G. H. Arthur, Mrs. Greatorex, Mrs. Mitchell, Miss J. Y. Marshall, Mr. E. F. Hughes, Chief Technician (also representing Professor T. J. Bosworth), Mr. J. E. Stock (represent-

ing R.V.C. Students' Union Society), Mr. S. Woodage (College employee), Mrs. S. Woodage (late employee of Mrs. Buxton), Mrs. Rumble (College employee and late employee of Mrs. Buxton), Mrs. Cook (late employee of Mrs. Buxton), Mrs. Ayres (daughter of Mrs. Cook), Mrs. Whiting (late employee of Mrs. Buxton), Mr. Richard Wilson (Goring), Mrs. Theophilus, the Rev. Geoffrey and Mrs. Carr (Bradfield), Mrs. Leslie (Streatley); Mrs. Bergstrom (Goring); Miss Collins (Streatley), and Miss Blunden (Cold Ash), a friend of the family.

Mrs. D. I. Glover writes:—

As a personal friend of the late Mrs. J. B. Buxton, I would like to express on behalf of myself and all her friends deep regret at the news of her death. She fought ill-health very gallantly for many years, and our regret is for our loss. Her connexions with the profession were very close and she shared the interest in every side of it with her brother, the late Major Dunkin, as well as with her husband. During their lives both she and Professor Buxton always extended a very warm welcome to any friends and members of the profession who were able to visit them.

Sincere sympathy to both their sons is felt by all.

Dr. A. J. Wilsdon writes:—

I am sure that all the older surviving members of the staff of the Institute of Animal Pathology, Cambridge, must have recalled the social life of Cambridge and felt very sad when they read of the death of Mrs. Buxton in last week's "RECORD."

The staff of the Institute were always welcomed by her to "Red Gables," and her hospitality was both generous and kind. There was no discrimination and everyone was treated alike.

Those of us who had the misfortune to be sick will also recall that in our convalescence, "J. B." was despatched to our lodgings to fetch us to tea and supper on Sundays.

Mrs. Buxton understood the meaning of loneliness, and although herself an invalid she never complained. We always received the same homely welcome whenever we met her—one of the profession's most charming and gracious ladies.

THE CENTRAL VETERINARY SOCIETY

We have received from the Central Veterinary Society a diary card for the 1956-7 session giving details of the Society's programme up to the Annual General Meeting in May next. A most attractive set of papers and discussions are listed, including: "My Impressions of the Veterinary Profession Abroad," in which Mr. Glover, Dr. Stableforth, Dr. E. L. Taylor, and Dr. Wooldridge will take part; a surgical symposium to which a number of distinguished clinicians will contribute; "The Organisation and Economy of Modern Veterinary Practice," and "Clinical Problems in Everyday Practice."

All meetings will take place at the Royal Veterinary College, by kind permission of the Principal, and times etc., will be published in THE RECORD before each meeting. All members of the profession will be welcome, and any enquiries should be made to Mr. Bruce V. Jones, hon. secretary, at the Veterinary Division, Allen & Hanbury's Ltd., Bethnal Green, E.2.

CHANGE OF ADDRESS

The Reading Veterinary Investigation Centre has removed from its former address, and all correspondence should now be addressed as follows: Ministry of Agriculture, Fisheries and Food, Veterinary Investigation Centre, Government Buildings, Coley Park, Reading, Berkshire. Telephone: Reading 54881.

Coley Park is a new regional headquarters for the Ministry for Southern England.

CLASSIFIED ADVERTISEMENTS

May we draw our readers' attention to the fact that all classified advertisements should reach this office by Tuesday morning at the latest? We regret that advertisements received after this date cannot be accommodated in the current issue.

PERSONAL

Births

GARRETT.—On September 10th, 1956, to Gillian, wife of T. Ralph Garrett, B.SC., M.R.C.V.S., of Rosemount, Musbury Road, Axminster, Devon, a daughter, Julia Susan, a sister for Geremy.

SHATTOCK.—On September 5th, 1956, to Jeanne, wife of Gordon Shattock, M.R.C.V.S., of Copplestone Cottage, Dunsford, Nr. Exeter, a daughter, Clare Lucinda, a sister for Simon.

STEEL.—On September 20th, 1956, to Jan, wife of Douglas B. Steel, M.R.C.V.S., 48, Albany Drive, Lanark, a son.

SUTTON.—On September 24th, at Loveday Street, Birmingham, to Jeanne (*née* Groy) and John Sutton, M.R.C.V.S., a son.

WATERSTON.—On September 10th, 1956, to Bettine, wife of Robert F. Waterston, M.R.C.V.S., of Merchiston, Millbank, Cupar, Fife, a daughter, Jane Elizabeth.

Marriages

GUILBRIDE—WINCH.—On September 1st, 1956, at Rio Bueno, Jamaica, by the Rev. K. D. Pronger, M.A., Patrick D. L. Guilbride, B.SC., M.R.C.V.S., DIP. BACT., of the Department of Agriculture, Hope, Liguanea, Jamaica, to Mary Elizabeth Winch, M.A.

JACK—KETTLES-ROY.—At St. Peters, Cranley Gardens, London, S.W.7, on September 8th, 1956, Murray Jack, M.R.C.V.S., eldest son of the late Mr. D. S. Jack, M.R.C.V.S., of King's Lynn, Norfolk, to Sonia, younger daughter of Major and Mrs. H. Kettles-Roy of 107, Queen's Gate, London, S.W.7, and formerly of Nairobi, Kenya.

R.C.V.S. OBITUARY

PALLIN, William Alfred, C.B.E., D.S.O., F.R.C.V.S., F.R.S.E., 5, Tower Gardens, Hythe, Kent, Colonel A.V.S. (Retd.) Graduated December 20th, 1894, N. Edinburgh. Fellow, May 14th, 1904. Died September 28th, 1956, aged 83 years.

S.V.R. OBITUARY

We record with regret the death of the following veterinary practitioner:—

CAREY, Ernest George, 1, Elm Grove, Gloucester Road, Bath, Somerset. Died September 11th, 1956, aged 83 years.

COMING EVENTS

October

6th (Sat.). Joint Meeting of the Nutrition Society and The Laboratory Animals' Bureau at Guy's Hospital Medical School, St. Thomas Street, London, S.E.1, 10.40 a.m.

10th (Wed.). Meeting of the Supplementary Veterinary Register Division, B.V.A., at 7, Mansfield Street, London, W.1, 2 p.m.

Lancashire Veterinary Association, General Meeting, University Veterinary Hospital, Liverpool, 2.30 p.m.

12th (Fri.). Meeting of the Welsh Branch, B.V.A., at the Belle Vue Hotel, Aberystwyth, 2.30 p.m.

General Meeting of the North of Ireland Division, B.V.A., in the Orchid Room of the Midland Hotel, Belfast, 8 p.m.

16th (Tues.). Joint Meeting of the Essex Division, B.V.A., with the Essex Branch of the N.F.U. at the Essex Institute of Agriculture, Writtle, Nr. Chelmsford, Essex, 7.30 p.m.

17th (Wed.). Meeting of the Section of Comparative Medicine, Royal Society of Medicine, at the Society's House, 5 p.m.

Meeting of the Society of Women Veterinary Surgeons at the Midland Hotel, Birmingham, 2.15 p.m.

18th (Thurs.). Ordinary General Meeting of the South Eastern Division, B.V.A., at the Royal Star Hotel, Maidstone, 2.30 p.m.

Association of Veterinary Teachers and Research Workers, Southern Region, Eighth A.G.M., Veterinary Laboratory, Weybridge, 1.30 p.m.

19th (Fri.). Annual Dinner-Dance of the South Wales Division, B.V.A., at the Seabank Hotel, Porthcawl.

Meeting of the Mid-West Division, B.V.A., at the Berkeley Café, Clifton, 2.30 p.m.

24th (Wed.). Meeting of the R.A.V.C. Division, B.V.A., at the Zoological Society of London, Regent's Park, London, N.W.1, 12 noon.

26th (Fri.). Meeting of the Society for the Study of Animal Breeding at the Royal Veterinary College, Camden Town, N.W.1.

Meeting of the Yorkshire Division, B.V.A., at the Royal Station Hotel, York, 2.30 p.m.

North of England Division, General Meeting, Agricultural Lecture Room, King's College, Newcastle upon Tyne, 2.30 p.m.

ADDRESSES OF DISEASE INFECTED PREMISES

The list given below indicates, first the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Anthrax

Ches. Streatfield Farm, Vicars Cross Road, Great Broughton, Chester (Sept. 27).

Cumberland. Dale Bottom Farm, Neddle, Keswick (Oct. 29).

Hants. Little Denmead Farm, Denmead, Portsmouth (Sept. 26).

Renfrew. Burnside Farm, Langbank, Port Glasgow (Sept. 29).

Roxburgh. Loanknow, Eccles, Kelso (Sept. 28).

Shrops. Hilbury Farm, Ash, Whitchurch, Salop (Sept. 25).

Staffs. Lightwood Lodge, Lightwood, Stoke-on-Trent; Clarke Hayes Farm, Handsacre, Armitage, Rugeley (Sept. 25); Mill Meece Farm, Mill Meece, Eccleshall (Sept. 28).

Yorks. Woodlands Farm, Scarborough (Sept. 25).

Fowl Pest

Ches. Brook Farm, Brereton, Sandbach (Sept. 25).

Lancs. Smiths Farm, Sharoe Green Lane North, Fulwood, Preston (Sept. 25); Mill Brown, Liverpool Road, Bretherton, Preston (Sept. 26); Clock House Farm, Fulwood, Preston; 48, Church Road, Tarleton, Preston; Oakdene, Tower Lane, Fulwood, Preston; 132, Lawson Road, Thornton, Blackpool; Chapel House Farm, 1, Coe Lane, Tarleton, Preston (Sept. 28); Myersdale, Hall Lane Longton, Preston (Sept. 29); Harrisons Farm, Drumacre Lane, Longton, Preston; Avonlea, Sutton Lane, Tarleton, Preston; 34, 28, and 8, Blackgate Lane, Tarleton, Preston (Sept. 30).

Swine Fever

Berks. 1. Normanstead Road, Tilehurst, Reading (Sept. 26); Fieldside Orchard, Westbrook, Shrewsbury (Oct. 1).

Glos. Larkham Farm, Matson (Oct. 1).

Hants. Tylney Hall School, Rotherwick, Basingstoke (Oct. 1).

Herts. Thatched Cottage, Henham, Bishop's Stortford (Sept. 25).

Lanark. No. 3, Lanrigg Holding, Chryston, Glasgow (Sept. 27).

Lancs. Stone House Farm, Lostock, Bolton; Harrison House Farm, Leigh Road, Hindley Green, Wigan (Sept. 28); Cope Bank Poultry Farm, off Ivy Road, Bolton; Glengarry, Rosemary Lane, Bartle, Woodplumpton, Preston (Oct. 1).

Oxon. Piggery Dene Field Allotments, Henley-on-Thames (Oct. 1).

Renfrew. Corseford Piggeries, Howwood (Sept. 27).

Somerset. Riydons Farm, West Newton, Taunton (Sept. 27); Court Farm, Churchill, Bristol; Lype Cottage, Wheddon Cross, Minehead (Oct. 1).

Staffs. Greenacres, Wolseley Road, Rugeley (Sept. 27).

Suffolk. Braiseworth Hall Farm, Tannington, Framlingham, Woodbridge (Oct. 1).

FOOT-AND-MOUTH DISEASE

The Minister of Agriculture, Fisheries and Food, in pursuance of Article 1 of the Foot-and-Mouth Disease (Infected Areas Restrictions) Order of 1938 (a) (hereinafter referred to as the Principal Order) has made the following Special Order as from October 1st.

The Order may be cited as the Foot-and-Mouth Disease (Infected Areas) Special Order No. 45, 1956.

(1) Notwithstanding the provisions of Article 2 of the Principal Order, animals may be moved from any premises (other than premises situated within two miles of any

Infected Place) within the Infected Area described in the Schedule to the Foot-and-Mouth Disease (Infected Areas) Special Order No. 44, 1956, to a slaughterhouse or bacon-factory in the Infected Area described in the Schedule to the Foot-and-Mouth Disease (Infected Areas) Special Order No. 38, 1956 (c), provided that the movement is authorised by a licence in the form prescribed in the First Schedule to the Principal Order, as amended by the Foot-and-Mouth Disease (Infected and Controlled Areas Restrictions) (Amendment) Order, 1956 (d), subject to the deletion from Condition 2 of the said form of licence of the words "nor movement out of any Infected Area, whether for the purpose of reaching a destination in an Infected Area or otherwise."

(2) Nothing in this Article shall be deemed to authorise the movement of any animal into or through any place which is not included in either of the Foot-and-Mouth Disease Infected Areas referred to in this article.

Newly Infected Areas

The area described in the Schedule below is declared to be an Infected Area :—

IN THE COUNTY OF BERKS

The Borough of Maidenhead.

Petty Sessional Division of Maidenhead: The parishes of Cookham, Bisham, Hurley and Remenham and so much of the parishes of White Waltham and Shottesbrooke as lies to the north and east of the road (B.3024) running from Touchen-end to Ruscombe, including the said road.

Petty Sessional Division of Forest: The parishes of Wargrave, Twyford and Ruscombe and so much of the parish of Waltham St. Lawrence as lies to the north of the road (B.3024) running from Touchen-end to Ruscombe, including the said road.

Petty Sessional Division of Reading: The parish of Sonning Town and so much of the parish of Woodley and Sandford as lies to the north of the railway running from Reading to Twyford, excluding the said railway.

IN THE COUNTY OF BUCKINGHAM

The Borough of High Wycombe.

The Petty Sessional Division of Marlow.

Petty Sessional Division of Amersham: The parish of Penn.

Petty Sessional Division of Aylesbury: The parish of Little Missenden.

Petty Sessional Division of Wycombe (County): The parishes of Bradenham, West Wycombe Rural, Hughenden, Chepping Wycombe and Wooburn.

IN THE COUNTY OF OXFORD

The Borough of Henley-on-Thames.

Petty Sessional Division of Henley: The parishes of Crowmarsh, Ipsden, Nuffield, Nettlebed, Pishill with Stonor, Bix, Rotherfield Greys, High Moor, Stoke Row, Checkendon, Rotherfield Peppard, Sonning Common, Kidmore End, Harpsden, Shiplake and Eye and Dunsden.

Petty Sessional Division of Watlington: The parishes of Newington, Berrick Salome, Brightwell Baldwin, Britwell, Watlington, Swyncombe Ewelme and Benson.

Further Extension of the Foot-and-Mouth Disease Infected Area around Rockley, Marlborough, Wilts.

An area comprising :

IN THE COUNTY OF WILTS

Petty Sessional Division of Swindon: The parishes of Haydon Wick and South Marston.

Petty Sessional Division of Cricklade: So much of the parish of Purton as lies to the south and east of the road running from Blunsdon St. Andrew via Crosslanes Farm and Purton to Wootton Bassett including the said road.

The area described in the First Schedule below is declared to be an Infected Area as from October 1st, on which date the Infected Area described in the Schedule to the Foot-and-Mouth Disease (Infected Areas) Special Order No. 20, 1956 (c) as contracted by the Foot-and-Mouth Disease (Infected Areas) Special Order No. 31, 1956 (d) and by the Foot-and-Mouth Disease (Infected Areas) Special Order No. 36, 1956 (e), shall cease to be an Infected Area.

The area described in the Second Schedule to this Order shall cease to be an Infected Area for the purpose of preventing the spread of foot-and-mouth disease on October 6th, 1956.

First Schedule

IN THE COUNTY OF GLOUCESTER

Petty Sessional Division of Thornbury: The parish of Rangeworthy.

Petty Sessional Division of Sodbury: The parishes of Iron Acton, Yate, Horton, Little Sodbury, Sodbury, Westerleigh, Dodington Pucklechurch and Dyrham and Hinton.

Petty Sessional Division of Lawford's Gate: The parishes of Frampton Cottrell Winterbourne, Mangotsfield Rural, Mangotsfield Urban, Siston, Wick and Abson and Doynton.

Second Schedule

IN THE COUNTY OF WILTS

The Borough of Malmesbury.

Petty Sessional Division of Chippenham: The parishes of Stanton St. Quintin, Sutton Benger, Christian Malford, Kington Langley and Langley Burrell Without.

Petty Sessional Division of Malmesbury: The parishes of Lea and Cleverton, Little Somerford and Great Somerford, so much of the parishes of Dauntsey and Brinkworth as lies to the north and west of the road running from Sutton Benger via Dauntsey Green, Brinkworth and Ballard's Ash to Wootton Bassett excluding the said road and so much of the parish of St. Paul Malmesbury Without as lies to the south and east of the main road (A.429) running from Malmesbury to Crudwell including the said road.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

Dog Menace to British Troops

Sir,—May I ask your help in a matter causing great concern to troops in this island? The local dogs are exceptionally alert, and no matter what precautions are taken, they sense our presence and give the alarm at times when it is most necessary for our presence to be undetected.

Night operations are hampered over and over again; and I wonder whether, among your readers, there are any who can suggest what special precautions we might take, or whether there are ruses we could employ to deceive the dogs who are proving a serious nuisance, and even a danger to our men.

Yours faithfully,

22308544 SGT. POCOCK, J.
c/o Sgts. Mess,
1st. Bn. The Suffolk Regt.,
British Field Post Office 53,
Cyprus.

September 10th, 1956.

[Replies may be sent direct, or will be forwarded.—*Editor.*]

Bovine Twins

Sir,—I was most interested in G. H. Arthur's article on a case of monozygous twinning in cattle, and in this connexion I think that the works of Stone, Stormont, and Owen are of some importance. They have shown that dizygotic twins have basically dissimilar blood-group patterns, but if anastomosis of the two foetal circulations has occured *in utero*, sex hormones and foetal erythrocyte precursors can pass from one foetus to the other. This gives rise to the phenomenon of erythrocyte mosaicism, whereby each twin has an admixture of the other's blood groups in addition to its own. The presence of erythrocyte mosaicism in a female calf born co-twin to a male is, therefore, diagnostic of the freemartin condition; this seems to be the case in about 90 per cent. of such heterosexual twins. If, however, the female has a completely dissimilar blood type to her brother, one can assume that no foetal anastomosis has occurred, and hence there has been no transfer of male hormone to the developing female.

Blood group studies and skin grafts also provide useful tests for establishing cases of monozygous twinning.

Yours faithfully,
R. V. SHORT.

Department of Veterinary Clinical Studies,
School of Veterinary Medicine,
Madingley Road,
Cambridge.

September 28th, 1956.

References

ARTHUR, G. H. (1956). *Vet. Rec.* **68.** 647.
OWEN, R. D. (1945). *Science.* **102.** 400.
STONE, W. H., STORMONT, C., & IRWIN, M. R. (1952). *J. Anim. Sci.* **11.** 744.
STORMONT, C. (1948). *J. Anim. Sci.* **7.** 516.

Salmonellosis

Sir,—I read Mr. Barton Mann's letter on salmonellosis (*Vet. Rec.*, **68,** 653) in which he commented upon my recent articles, and would agree with him that I dealt only very briefly with problems of nutrition and disease. I would make no claims to much knowledge of this subject myself, but there is in any case a real lack of information on this topic. Diet is a constant source of worry to breeders of almost all types of laboratory animals, including mice, and while apparently satisfactory foodstuffs are available, no one pretends that there is nothing to learn of the matter. On the contrary, I have had innumerable discussions on this point with mouse breeders. However, I do feel that epidemic salmonellosis is a matter of the presence of a pathogenic micro-organism in a population, rather than a matter of faulty nutrition. A fully adequate dietary regimen will not, of itself, guarantee the elimination of *Salmonella* organisms from a population of mice or turkeys—surely hygiene comes into the question? Even the simple process of crowding mice together can precipitate an epidemic at times. And does not Mr. Barton Mann cull any birds?

It is always of value to watch developments in fields other than one's own, but one must always beware of transposing observations too readily. In a colony producing mice for use in experimental work, it is essential that the mice should not only appear disease-free in the breeding colony, but that they should still show no signs of unwanted infection when subjected to experimental stresses. This is, of course, a demand with which the poultry industry in general does not have to contend. If anything, there is a case for considering that mouse users demand an even higher standard of health than poultry breeders.

I would agree with Mr. Barton Mann had he simply wished to emphasise the importance of adequate nutrition as one of several other important factors in disease control, but I cannot give it pride of place. Mouse-feeding practice at the present time is not as sound as it might be, but neither is the standard so low as to warrant far greater attention to nutrition aspects than bacteriological aspects when one is trying to control epidemics. For an epidemic to break out, there must be a pathogenic micro-organism somewhere, but surely there need not always be a dietary deficiency?

Yours faithfully,
A. A. TUFFERY.

Microbiological Research Establishment,
Porton,
Nr. Salisbury,
Wilts.

September 28th, 1956.

A Disease of Cattle in Britain Resembling the Virus Diarrhoea-Mucosal Disease Complex

Sir,—Messrs. Dow, Jarrett and McIntyre are to be congratulated on the painstaking research work they have carried out on the above condition, as published in THE VETERINARY RECORD of September 15th, 1956. However, there are two statements, one occurring in the introduction and repeated in the discussion, in which the authors imply that many practitioners, for the lack of a better understanding of the disease, named the condition " malignant catarrh," " dirty mouth," and " acorn poisoning."

There is no doubt that in certain parts of the West of Scotland in the late autumn of 1955, true acorn poisoning occurred and the symptoms in no way suggested mucosal disease. Constipation was the main symptom in acorn poisoning with profuse catarrhal discharge from the nose and eyes and frequent attempts to micturate. All these symptoms were accompanied by acute depression and stasis of digestion.

Dirty Mouth or Armagh disease has been seen mainly in imported cattle and the lesions seem to be restricted to the mucous membrane of the mouth, and I have always had some doubt as to the occurrence of true malignant catarrh in Scotland.

The Mucosal Disease Complex of young cattle stock in some of its aspects has been more difficult to differentiate from parasitism and Johne's disease, and in many cases veterinary surgeons have submitted faeces for estimation of the worm burden, simultaneously sending bloods to the laboratory for complement fixation test in determining the presence, or otherwise, of Johne's disease.

Nevertheless, I wish to record my appreciation of the excellent work carried out by the authors, for the timely publication of their findings, and I hope that they are stimulated to embark on further research into this condition.

Yours faithfully,

W. GRANT.

"Bencleuch,"
Newmarket,
Bannockburn.

September 26th, 1956.

The Veterinary Codex

Sir,—Recently, I have had occasion to prescribe acidum hydrochloricum dil. B.P. in cases where poultry, housed on deep litter, have suffered impaction or semi-impaction by a depraved appetite causing them to eat the litter. One tablespoon to one gallon of drinking water usually works wonders in overcoming the achlorhydria, leading to an improvement of digestion and a clearing of the trouble if the affected birds are removed to surroundings devoid of litter or if the straw (which usually impacts) is replaced by shavings.

As, under practical conditions, I find the consumption of excessive roughage conducive to epidemic coccidiosis, in the case of chickens, or blackhead, in the case of turkeys, a simple remedy such as this often obviates or controls what might otherwise be substantial losses.

I am surprised to find that the British Veterinary Codex gives no explicit instructions for its preparation. The Codex informs one that it contains 10 per cent. w/w of HCl in distilled water, and has a weight per millilitre at 20° of 1.042 to 1.049 grammes.

The Extra Pharmacopoeia is more enlightening and says, "Is prepared by diluting 28.44 by vol. of the strong acid with water to 100."

One appreciates the enormous amount of work which has been done in the compilation of the Veterinary Codex but could it not be made possible for future editions to include the simple preparation of such formularies by amplification along the lines above?

Incidentally, I find no reference in the Veterinary Codex to Douglas's mixture, which for very many years has been an established and proved tonic for cage birds and poultry.

Put a gallon of water into an earthenware vessel and add 8 oz. of sulphate of iron (common copperas). When the iron is dissolved add ½ oz. of sulphuric acid (conc.)—with precautions of course. To use, add ¼ pint to a gallon of drinking water and give every alternate day for three weeks. Top up the drinkers with ordinary water on the unmedicated days.

Yours faithfully,

T. BARTON MANN.

"Braust,"
Weyhill,
nr. Andover,
Hants.

September 10th, 1956.

The Husbandry and Diseases of Pigs

Sir,—I was a little surprised to find that there is no reference to the condition of "foot-rot" in this publication. Whilst this may not be a particularly important complaint in the pig there is surely no disputing the commonness of its occurrence. The lesion itself is also interesting, being more akin, perhaps, to "canker" in the horse than either foot-rot in sheep or foul in cattle. So far as I am aware there is no published work on the bacteriology of the condition. It happens also to be one of the complaints occasionally reported as suspected foot-and-mouth disease by reason of the lameness it produces.

It would be interesting to hear the opinion of others on the inclusion of a paragraph on so-called "milk fever." I am open to correction, but I cannot recall having seen any recent evidence by way of published work to support the existence of this syndrome. Moreover, on theoretical grounds alone, one would suppose that if any such condition occurs it is much more likely to resemble lactation tetany in the bitch, which latter complaint bears little resemblance to milk fever in the cow. The references to the condition in the pig which I have seen in years past struck one as being a mixture of "heat stroke" and agalactia.

Yours faithfully,

A. H. HOGG.

2, Telford Avenue,
Leamington Spa.

September 1st, 1956.

DISEASES OF ANIMALS ACT, 1950—GREAT BRITAIN

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period		Anthrax	Atrophic Rhinitis	Foot-and-Mouth	Fowl Pest	Sheep Scab	Swine Fever
1st to 15th September, 1956		33	—	19	30	—	36
Corresponding period in	1955	21	1	—	2	—	49
	1954	12	1	—	3	—	42
	1953	13	—	—	14	—	99
1st January to 15th September, 1956		1,118	8	99	487	—	565
Corresponding period in	1955	523	4	6	383	—	1,107
	1954	205	4	12	594	—	1,136
	1953	490	—	28	722	—	2,220